



# CRITICAL REMARKS

ON CERTAIN RECENTLY

PUBLISHED OPINIONS

CONCERNING LIFE AND MIND.

BY JOHN ROBERTON,

SURGEON,

MEMBER OF THE LITERARY AND PHILOSOPHICAL SOCIETY OF  
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TO

JOHN ABERCROMBIE, M.D., F.R.S.E.,

Fellow of the Royal College of Physicians, Edinburgh, and first Physician to his Majesty, in Scotland: Author of two Treatises on Mental Science, the one "Enquiries concerning the Intellectual Powers," the other, "The Philosophy of the Moral Feelings," which, with several excellent works on Practical Medicine, have justly entitled him to be regarded as an honour to his country, and eminently a benefactor of the younger Members of his Profession,—these Critical Remarks on Life and Mind are respectfully inscribed.



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## P R E F A C E.

IT was the remark, a century ago, of Bishop Butler, that it had come, he knew not how, to be taken for granted by many persons, that Christianity was at length discovered to be fictitious. Admitting, as I readily do, that erroneous opinions concerning the nature of mind are of small importance when compared with scepticism in matters of religion, I, nevertheless, think it worthy of particular notice that the doctrines of materialism are, at this present time, more undisguisedly inculcated by physiologists, both in their books and in their public lectures, than at any former period; insomuch that it might seem to have been at length found out, that there is really no such principle as mind—the mind, in the course of its inquiries concerning the nervous system, having happily discovered that itself does not exist! but that it is the brain which possesses the faculties hitherto attributed to mind.

One physiologist of high name, in delivering a course of Lectures on Phrenology, informs his audience that “Anatomy and Physiology alone can furnish rational notions of the human understanding.” He says, “I will show you the different organs connected with the different



faculties;—I shall demonstrate them not only in man, but in the whole series of animals. In laying them before you, I exhibit something more comprehensible than *imaginary beings*.” “Anatomy and Physiology are, therefore, the objects of our study; we shall consider the cerebral functions as we would any other organic acts: we shall not abandon a part of our task to the metaphysicians as had been erroneously done up to the birth of phrenology, and we shall thus avoid the obscurities which envelop psychology, where *all is dark and vague!*”\*

In perusing these and similar passages, the reader knows not whether to indulge incredulity or astonishment. He is ready to exclaim: M. Raspail professes to explain the operations of mind by Chemistry, and, perhaps, Doctor Broussais can really demonstrate, before his class, the organ of “Causality” in the act of reasoning, as plainly as M. Majendie can exhibit the lacteals absorbing chyle. Where so much is promised, and so confidently, who can be sceptical!

That the pursuit of phrenology has led a few of the shallowest of its disciples into materialism is well known, and this has, perhaps, been owing to the very obvious circumstance, that some, with skill sufficient to dissect a brain,

\* Broussais' Lectures on Phrenology: delivered in the University of Paris: Published in the Lancet.

have become professors of phrenology, with no other qualifications whatever for the office. Although not a convert to Phrenology, I am unable to see how this doctrine should lead to materialism. The acutest of thinkers, himself opposed to the system of Gall, has said, "The whole brain may be one undivided organ, or a part of the brain may be the organ, or different parts may be organs of different functions. In all these cases, the materialism or immaterialism is the same, because, alike in all, some affection of the material part is an indisputable prerequisite to the *mental* affection. The immaterialist believes that it is the soul which sees, and the soul which hears, as much as that it is the soul which judges, and the soul which imagines: and since he does not condemn as impious the allotment of different organs of sight and hearing, what great heresy is there in the allotment of different parts of the sensorium, as the organs of judgment and imagination? If, indeed, any one should say that *the affections of these parts* are, themselves, judgment and imagination, he would be a materialist; but he would be as much a materialist if he should say that the affections of the organs of sight and hearing, are themselves the ideas of colour and sound."\*

Some are so charitable as to treat materialism as if it

\* See a Review of Villers sur une Nouvelle Théorie du Cerveau, in the Edin. Review, vol. 2, attributed to Dr. Thomas Brown.

were a trifling error, 'leading to no practical evil. With such I entirely differ. I wave, however, all discussion in reference to its effects on the moral condition of its votaries, in order to notice its effect on their understandings; for what is to be said in apology for those who are so bewildered as to confound *that* with the brain, which, by a necessity of its nature, thinks of the brain as an object of sense!

Such reasoners, it might seem, believe that while we have a clear perception of the external world, it is impossible we should attain to a distinct conception of mind by consciousness. While, say they, all existing *without* is clear and evident, *within*—in the mine of the mataphysician—all is dark and vague. This may be true in their own particular case, but it is erroneous if affirmed as a general truth. For what is all science, from the fabricating of a needle, to the launching, in complete equipment, of a ship of war, but *effects* of mind? effects of innumerable efforts of reflection, every one as distinctly an object of consciousness *as a purely mental state*, as the pen I am writing with is a distinct object of my consciousness as an external body. If the mind were percipient merely of external things what would happen? The world would remain subject alone to the operations of the Divinity. It would possess all the beautiful forms, and the useful properties originally conferred upon it, but it

would present the aspect of an untrodden wilderness. Neither the cottage nor the palace would be there, nor one of all that infinite variety of inventions by which the rude elements of matter are fashioned for the use, ornament, and glory of thinking beings. Ask the statuary when the block of stone is placed before him, where resides the *form* which is to be evolved by his chisel. And he will answer, in the mind: that it was there created, while as yet the block lay in the recesses of the quarry; that in silence and solitude, when the senses were unemployed and the world without was as nothing, it was reared in the mind; models of grace and beauty, rising there, from which to select what was fitting. So far from feeling that all within is dark and vague, the sculptor will confess that, *within*, the forms of beauty are inexpressibly vivid and perfect; compared with which, external beauty is insipid and lifeless.

In asserting that, in psychology, all is dark and vague, it is a very common error to confound *the study of mind as a science*, with the mere recognition of mind as *something* possessing powers and susceptibilities essentially its own. The former is difficult, requiring talents of a high order, and, therefore, to many it will seem to be dark, while the latter is within the reach of an ordinary capacity.

The notion of our being able to study the human under-



tanding only by the help of anatomy and physiology, is extremely absurd: since these have never, as yet, aided that science in the smallest particular whatever. The study of the science of mind depends, chiefly, on reflection, assisted somewhat by observation and testimony. Had the human brain remained untouched by the knife of the anatomist, we should not, on that account, have had one conception fewer in reference to the nature of the mind, and the number of its faculties. It would, doubtless, be curious, and it might even prove highly useful and important, should it be fully established (and it may yet be established,) that certain mental faculties predominate in power and activity, in connexion with particular forms of the head: but what need of anatomy, in the pursuit of this subject? I apprehend—none. The organological system, every candid phrenologist will allow to be purely hypothetical; if, indeed, a system can deserve the name of hypothesis, which is a mere creation of the fancy.

While some deny the existence of mind as a principle, others, more credulous, are willing, not only to acknowledge the existence of the thinking mind as something different from matter, but even contend for another principle, resident in all living beings, as the architect of the organic frame. This is comparatively a harmless hypothesis, but as it introduces needless mysticism into the temple of science, its untenableness merits exposure.

## DR. ELLIOTSON'S OPINIONS ON LIFE AND MIND.

SEVERAL years ago, in perusing Professor Elliotson's translation of Blumenbach's Physiology, with notes and additions, I amused myself with writing a few remarks in the margins of the pages on some of the accomplished translator's opinions on Life and Mind—opinions which appeared to me to be unworthy of their author, and calculated to mislead and bewilder his readers, particularly the juvenile portion. As Part the First of a new treatise on physiology, by Dr. Elliotson, has appeared, not so much a translation of Blumenbach as an original work, I was induced, for the purpose of comparison, again to peruse both my own marginal notes and the chapter on Life and Mind, as it stands in the present maturedly considered edition;\* not altogether without the expectation, I confess, of finding the work purged of certain speculative views, which, to say the least of them, are but little fitted for an elementary treatise. In this expectation I was disappointed. The same opinions are maintained and stated with, if possible, greater confidence than before, and illustrated from a variety of sources—from the writings of Gall, from those of several eminent divines, not omitting appeals to the sacred scriptures.

I am far from intending to insinuate that there is any novelty in the opinions referred to. Life and Mind have always supplied *quæstiones vexatæ*. They have afforded

\* Human Physiology. By John Elliotson, M.D., Cantab. F.R.S., President of the Royal Medical and Chirurgical and of the Phrenological Societies; Professor of the Principles and Practice of Medicine, &c., in the University of London, &c. Fifth Edition. 1835.

matter of controversy almost ever since men were accustomed to differ, which is equal to saying, ever since they began to speculate. Very probably such disputes might long ago have been set at rest, had philosophers submitted to confine their attention to the phenomena of animal being, discoverable by consciousness and by observation; and reasoned from these with the same caution they have exhibited in reasoning on most other subjects. But prejudices, chiefly connected with theology, have interfered; and wonderful has been the confusion of thought and language displayed in this, above all other controversies, as the reader will readily admit who has the patience to peruse, among a long catalogue of treatises that might be named, the singular work of Barclay on Life and Organization, or the more interesting though prolix chapters on this subject in the Memoir of Cullen by Dr. Thomson.

In his Preface, Dr. Elliotson has intimated that the correction of any errors and the communication of any facts, either publicly or privately, will be esteemed by him a valuable favour. It is in the same fair and candid spirit, I trust, in which this invitation is given that I accept it; with the intention, nevertheless, of freely canvassing some of his views, which I cannot help regarding as altogether illogical, and well worthy of refutation for the student's sake, who is but too generally an easy convert to whatever wears the semblance of novelty, provided it is presented with a bold assurance which dissipates at once all difficulties and doubts.

Much that the author has written on Life merits approbation. "We see matter," he observes, "in a certain state possessed of a certain power, which we term life, and the object of physiology is merely to observe its effects, just as it is the object of chemistry to observe the circumstances of the affinity of different bodies, and of physics to observe other phenomena of matter, without vainly speculating on the essence of matter or the essence of affinity, to comprehend which our faculties are in their nature incompetent."\*

After sentiments so sound, and, with one exception, so well expressed (“essence of affinity” appears to me to be a phrase without meaning), it excites surprise to be told that “the Almighty has endowed organic matter with the superaddition of life”<sup>\*</sup>; and the surprise is not lessened when we further read that “a power or property of matter (e. g. life or attraction) cannot be matter.”<sup>†</sup> The tenableness of the latter opinion I shall have occasion by and by to canvass; but the former—that life is a superaddition to matter, deserves a brief examination, especially as the same view, with respect to the superaddition of certain other qualities to matter, is expressed in another passage in the following terms:—

“Substances consist of particles endowed with certain properties, without which their existence cannot be conceived, namely, extension and impenetrability, with others which proceed indeed from their existence, but are capable of being subdued by opposing energies, namely, mobility, inertness, and with others apparently neither necessary to their existence nor flowing from it, but merely superadded; for example, various attractions and repulsions and various powers of affecting animated systems.”<sup>‡</sup>

This account of matter is far from being unexceptionable, for several reasons, but I shall refer to one only. It is no doubt allowable to say, with reference to extension and impenetrability, that, constituted as our senses are, these qualities necessarily enter into our conception of matter, as something extended and capable of resisting compression; and with regard to certain other qualities of matter, that they are unnecessary to this abstract conception of it. But instead of this guarded view, the writer expresses himself in such a manner as to imply that there are certain qualities necessary to the existence of matter, and certain other qualities which neither flow from, nor are necessary to, that existence, but merely superadded; which seems to me to be altogether erroneous; and, moreover, as we shall see, is the source of

\* Page 41.

† Page 39.

‡ Page 2.



confusion in some of his subsequent reasoning. It has been customary for metaphysicians to divide the qualities of matter into two classes, primary and secondary, in order to distinguish such as matter in every form exhibits, and which, consequently, are essential to a *definition* of it, from such as it may or may not exhibit, according to specific differences existing between different substances, and according as any given substance undergoes changes in its chemical or its mechanical states. But why should it be thought that the one class of qualities is essential to the existence of the particles of substances and the other not? Why are extension and impenetrability qualities more essential to the existence of the particles of the substance named gold, for example, than yellowness, which, according to Dr. Elliotson, is a superadded quality? Matter, in every condition it is possible to conceive of it, we are never to forget, is only known to us by certain qualities; and that by a quality of matter whether it be a primary or a secondary quality, we mean *that* which is the cause of a particular sensation in us, percipient beings, and mean nothing more. Extension and impenetrability, therefore, are nothing but matter *in certain relations to the mind*, precisely as mobility, attraction, inertness, colour, viscosity, fluidity, odour, sweetness, are nothing but matter in certain other relations to the mind. The feelings of extension, colour, sweetness, &c., it is true, are not matter, but feelings excited by matter, accompanied *necessarily* by the belief, however, that matter when it excites such feelings is extended, coloured, sweet. Hence it is clear that yellowness—that quality of the particles of the substance, gold, which excites in me a feeling of yellowness—is not something superadded to the gold. On the contrary, it is doubtless as essential to the existence of the gold, in the circumstances in which this quality is perceived by me, as extension and impenetrability are to the existence of matter in general. To assert that yellowness is not necessary to the existence of the gold, in the circumstances in which this quality is perceived by me, is to assert what is utterly unmeaning;

for what, I ask, is the yellowness of the gold, but the gold itself in a certain relation to the percipient mind? just as the quality of impenetrability, likewise possessed by the gold, is nothing else than the gold in a certain different relation to the same percipient mind.\*

To apply these observations to the phenomena of life:—"The Almighty," says the writer, "has endowed organic matter with the superaddition of life." Here then is a further addition to organic matter, besides the qualities previously superadded before it was organised: in other words, living organic matter possesses, first, qualities necessary to its existence as matter; secondly, qualities not necessary, but superadded; and, thirdly, vital qualities superadded to both! This statement, in my opinion, is perfectly erroneous. It is enough, if we say, that what are called the phenomena of life are qualities of matter in certain conditions, necessarily arising, so far as we know, from such conditions. Life, indeed, is not the name of a quality, properly speaking, but a generic term inclusive of a great number of qualities, which matter, as it exists in animals and vegetables, impresses on the percipient mind; these vital qualities, to vary the mode of expression, being *nothing else* than matter, as it exists in such bodies, perceived by the mind through the instrumentality of the senses. So far from having reason to regard the phenomena of life as qualities superadded to organic matter, we have no reason whatever to infer that matter could exist, in the *identical state* in which it exists as a plant or an animal, without exhibiting the identical vital phenomena it does exhibit, any more than we have to infer that oxygen could exist as oxygen without possessing its present properties; or matter in general exist without possessing extension. Were I to be shown a mass of iron, or of granite, exhibiting vital phenomena, I should be ready to admit that

\* It is scarcely needful to remind the young student that "matter in the abstract," or "matter in general," is nothing in nature, but is merely a logical figment. Matter which is known to us, that is to say, terrestrial matter, is gold, silver, sulphur, phosphorus, or one of the other uncompound bodies; or a compound of two or more of these.

life was, in this instance, superadded, knowing that iron and granite do not commonly exhibit such qualities; but when I see vital properties always belonging to matter, in forms, as regards their composition, perfectly unique, and which art cannot imitate, I infer that they are the properties of matter in such an inimitably compounded condition; and the conclusion is warranted by the fairest analogy, it being found that changes in the composition and mechanical condition of matter, are attended by corresponding changes of properties. A lump of gypsum, for example, possesses certain properties. We separate its constituents, and a variety of new properties are immediately exhibited. We reunite the substances; the new properties vanish, and the old properties return. Here it is surely reasonable to infer, that the changes in regard to properties, resulted from changes in the conditions of the matter. If it should be said that the conclusion is a precarious one, because there is little or no analogy between chemical and vital properties, I reply that as little analogy is there between the condition of a chemical salt and that of a seed or an ovum. If the two classes of properties are immensely different, no less wonderfully different are the two kinds of bodies as to the nature of their composition.

It is an important observation, the merit of which, I believe, is due to Dr. Prout, that we have no reason to believe that a living being, in converting alimentary matter into its own structure, detaches matter from its ordinary properties and invests it with new ones; we have no reason to believe, for instance, that oxygen and hydrogen unite, in the composition of a living being, in the proportions which form water to form a substance different from water. The chemical powers of matter, therefore, we have reason to conclude, are not subverted but remain, while others are brought into view—other powers which, although they are truly peculiar, are not more so than the living creature itself, *as a compound of matter*, is peculiar. Perhaps a sufficient argument in refutation of the opinion that the Almighty has endowed matter with the superaddition of life is this: organic beings are nourished

on dead matter, and it is only after this alimentary matter has entered the fluids of plants and animals that it exhibits vital qualities. If then the Deity superadds to matter, life, the process of superaddition must take place by an act of divine agency at every moment when the dead matter is being assimilated; and as the body of an organic creature is in a state of continual change and renovation by accessions of fresh matter, this opinion of the author necessarily supposes a species of causation, which it would, of course, be impossible to disprove; but which, nevertheless, we are bound to regard as altogether unphilosophical.

As right views, concerning the nature of life, in no small degree contribute to correct reasoning in the science of medicine, forming, I might almost say, the basis of medical logic, I shall take the liberty of entering on the subject, at greater length, in a future section; with the purpose, in addition, of examining a famous hypothesis of Dr. Prout's—that *besides the elementary constituents*, there is in every living being, whether plant or animal, *an organic agent* or architect, whose office it is to originate, direct, and maintain the vital operations.



## ON DR. ELLIOTSON'S OPINION THAT IT IS THE BRAIN WHICH THINKS.

“ Mind,” says Dr. Elliotson, “ is the functional power of the living brain. As I cannot conceive life any more than the power of attraction, unless possessed by matter, so I cannot conceive mind, unless possessed by a brain, or by some nervous organ, whatever name we may choose to give it, endowed with life; I speak of terrestrial or animal mind; with angelic and divine nature we have nothing to do, and of them we know in the same respects nothing.”\* Again, “ a physical inquirer has to do with only what he observes, he finds this power but attempts not to explain it. He simply says, the living brain has this power, medullary matter though it be. Seeing that the brain thinks, and feels, and wills as clearly as that the liver has the power of producing bile, and does produce it, and a salt the power of producing a certain form and does crystallize, he leaves others at liberty to fancy an hypothesis of its being a subtle, immaterial, immortal substance.”†

These passages sufficiently convey the writer's opinion, that it is the brain which feels, thinks, and wills; or, in other words, that what are called the qualities of the mind, are, properly speaking, qualities of the brain—the brain and the mind, so far as these phenomena are concerned, being identical. The arguments by which he strives to support this view will be noticed in a future section. Were it a *sine quâ non*, dissenting as I do on many points from Dr. Elliotson, that I must of necessity maintain *by argument* that the mind is immortal—the shift, in part, which he assumes an opponent must be forced upon—I should decline the discussion. Whether I hold the mind to be an immortal substance or the contrary, has nothing to do with the proposition in question, which is limited to this, that *the brain thinks as clearly as that the liver secretes bile*. It will appear, I trust,

\* Part 1st, page 32.

† Part 1st, page 39.

in what I shall say, that I am at liberty to steer clear of all hypotheses whatever relative to the mind's destiny, and that I am in no instance obliged to advance beyond what I actually know from consciousness aided by the senses.\*

When a person is led to reflect on the knowledge he possesses, suppose of mind, of a chemical salt, of the medullary substance brain, of the bile, or of other objects, and sets himself to discover how he obtains his knowledge, he finds that the enquiry is exceedingly simple. He speedily discovers that, leaving testimony out of the account, his knowledge of mind is derived from consciousness, and that from no other source does he obtain his knowledge of it. He is conscious that he exists, that he has feeling, memory, reason, volition; and is persuaded that these faculties (which by turning the mind to contemplate its own operations he is able at pleasure to subject to rigid examination) belong to that, whatever it is, which he is accustomed when speaking with strict propriety to denote by the pronoun I. Further, by a law of his nature, he believes that his hand, his foot, the other members of his body, and all objects which impress his senses are distinct from this same entity. He never confounds this thinking being with any thing else whatever; and intuitively feels that it involves an absurdity to suppose that it could be added to, or subtracted from, or divided. The properties of mind he learns by consciousness, and by a law of his nature, is compelled to ascribe them to *something* of which they are the properties. The properties of matter he obtains a knowledge of also by consciousness, through the aid of the senses, and intuitively refers them to *something else*, of which they are the properties. Concerning matter, equally as concerning mind, all his knowledge depends on consciousness in the more extended sense of that word. And yet, as has been stated, by a law of his being, he never confounds perceptions of mental properties—volition, reason,

\* It is difficult to define simple consciousness, which is nothing different from our sensations, perceptions, emotions. When I admire anything, I am conscious of admiration; when I rub my finger on a piece of sand-paper I am conscious of roughness; but the consciousness is in neither case different from the emotion or the sensation. From consciousness and memory arises the belief in personal identity.

memory, fear, hope, joy—with perceptions arising from impressions made on the senses—extension, hardness, fluidity, bitterness; in other words, he never confounds the properties of mind with those of matter, nor ceases to feel, whenever he reflects on the subject, that matter in all its forms is one thing, and mind, in all its infinitely diversified states, is another and entirely different thing.<sup>[a]</sup>

These are first principles (if I, indeed, have succeeded in stating them correctly), which it is not optional to admit or to reject. If they are rejected, every proposition which it is possible to present for the assent of a rational being may be rejected. On the assumption then, that they are indubitably true, I proceed to the examination of this notable proposition,—that it is as clear that the brain thinks, as that it is the liver which secretes bile. In regard to the liver, I become acquainted with it by the help of my senses; as also, by the same means, with the fact that the bile is formed in the liver, and issues from its duct. No sane person will differ from me on this point; he will at once assent that it is the liver which produces the bile. In like manner, were I to subject a liquefied salt to the action of heat, he would agree with me, on witnessing the formation of crystals, that the saline particles have the power of taking a certain definite crystalline form. In these instances I should need to assume nothing; what I asserted would be granted without a moment's hesitation. But Dr. E. asserts, that it is not more clear that the liver produces the bile, than that it is the brain which feels, thinks, and wills. Will this, I ask, be as readily conceded as true? Manifestly not. I, for one, do not acknowledge that there is sufficient resemblance between mind and bile—between secretion and thinking—to warrant the comparison at all; or that the knowledge we possess of the one class of phenomena can be employed for the elucidation, in the way of analogy, of the other class; and that I am altogether *singular* in thus dissenting from this opinion of the writer, no one will assert. The bile is obviously matter, the crystal is

[a] See Supplementary Note A.



matter, and both are confessedly products of matter; in short, matter in fresh forms. But thought, volition, anger, joy—the alleged products of the brain—are not *obviously* matter in fresh forms. Has Dr. Elliotson touched a volition? Has he tasted, or smelt an emotion? When has he weighed or measured a thought, confined it in a jar, reflected or refracted it, or made it inhere in some body, so as to demonstrate its presence and its nature? Has he examined its qualities by a chemical test? If he has done none of these things, it is evident that mind does not possess the properties of matter, according to any known definition of that substance; and if it cannot be shown that mind possesses so much as one quality, either of ponderable or imponderable matter, how can it be with fairness affirmed that mind is a product of the brain, as clearly as that bile is a product of the liver? It may be suggested, further, whether it at all diminishes the difficulty, to assert, with Dr. Elliotson, that mind is *a property* of the living brain, since a property of matter, be it living or brute matter, is nothing different, and *cannot be conceived as any thing different*, from matter.

That Dr. Elliotson has fallen into some confusion of thought, appears from this avowal—that as he cannot conceive life more than the power of attraction, unless possessed by matter, no more can he conceive mind, unless possessed by a brain, which is tantamount to saying that he sees no more difficulty in conceiving the brain to exhibit the phenomena of mind, than in conceiving matter to exhibit the phenomena of life and attraction. But here he falls into the error of comparing mere terms—life and attraction being nothing else than terms which express certain phenomena of matter—with mind, which it is a gratuitous assumption on his part to represent as a term expressive of phenomena of matter. The comparison, therefore, cannot be allowed.

Another proof of confusion of thought appears in the singular assertion, that he cannot *conceive* mind unless possessed by a brain. For my part, I could conceive mind, were I entirely ignorant of animal anatomy. A



brain enters in no respect into my conception of mind. The intimate and wonderful connexion that subsists in animals between a brain and mind, is a fact in physical science which might have remained unknown as late in the progress of discovery as the circulation of the blood, or even to the present hour, without, perhaps, materially retarding the progress of mental science. That the idea of a brain, then, is *necessary*, in order to conceive of mind, is not to be admitted. The idea of a brain does not enter, I venture to assert, into Dr. Elliotson's conception of mind. His meaning must be, that he has no knowledge of the existence of any terrestrial mind, *his own conscious mind excepted*, except as exhibited in a living animal; in other words, that he knows nothing of *disembodied* mind. And no wonder, unless it were thought reasonable that minds should be visible, and might be subjected to examination, as the naturalist examines his specimens of moths and plants.

It is true we have irresistible evidence for the existence of other minds besides our own. Every person intuitively assents to the irresistible nature of the evidence for this fact. What I consciously experience in myself, however, with respect to the nature and power of my own mental faculties, is to me the *sole basis* of this evidence. I reason and feel, and I perform a variety of operations, using means to an end. In the mechanism and actions of my own body, and in all nature around me, I behold proofs of agency and design, although the agent I discover not: nevertheless when once I have detected, not contrivance alone, but wonderful skill, employed in effecting an infinite variety of beneficent designs, I intuitively infer the existence of an intelligent, beneficent mind, the author or cause of all such effects. This is an intuitive, irresistible inference. I have no conscious perception of the supreme mind, nor of inferior minds, distinct from my own. I infer the existence and attributes of the Deity from his works, in the same manner precisely as I infer the existence and attributes of a fellow mind; it being in the nature of things impossible, without miraculous aid, that I should form even the faintest

conception of the existence of other minds, except by the evidence of such operations on matter, as I am conscious that my own mind is, in some degree, capable of imitating or producing: which is merely a different mode of affirming that the existence of no mind can become known to me unless it is possessed of faculties in some sense resembling those of my own. Doubtless the evidence for the existence of a fellow mind is more immediately perceived than that for the existence of the Deity, because the evidence for the former is of easier observation, and lies within an infinitely smaller compass. I behold a form and organs, like my own, moving and acting with intelligence, as I myself move and act; and to this form I intuitively ascribe the possession of a mind with like faculties and affections. In this *inferential* recognition of a fellow mind, what need is there I should recollect, or even know, that there is a brain and nerves, by which it in some manner operates, more than that there is, in the same body, the pancreas and the pineal gland?

A question sometimes started by those who regard the brain and the mind as identical, is this: if it be not the brain's office to think, of what use is so large an organ in the animal economy?

The brain, it may be said in reply, probably, indeed, certainly serves a *variety* of uses in the animal economy.\* But the question is a mere trap, and there is no need whatever to be entangled in it; for they who assert that the brain is the mind, are bound to prove what they affirm, and not to throw the burden of proving what are the uses of the brain on their opponents. In reflecting on what this question imports, the student is especially bound to recollect and consider well what mind is—that it is an existence having no quality in common with any thing in the material world; that it is by mind alone he investigates the structure and the functions of the brain—the nature of the mind itself, the nature of whatever besides he attends to; and that without mind he could know nothing—could not even so much as doubt whether

\* See the Gulstonian Lectures and the other Physiological Works of Dr. A. P. W. Philip.

or not he possesses a mind! Should he disregard this preliminary train of reflection, he will in all probability feel the question to be very perplexing, since he will be ready to regard the mind in the same light as the materialist—as being not that most wonderful thing that thinks, but something that is analogous to the parts and products of the body,—a mistake which will leave him deservedly in the power of his assailant. Unhappily, the ability to turn the mind inwards, to study its own qualities, is apt to be in a great measure lost, or, perhaps, never acquired, for want of cultivating, in a moderate degree, the habit of abstraction; and thus the power of accurate, discriminative thought is greatly impaired or altogether wanting. If the student possess and have diligently exercised the power of reflecting on his own mental operations, he will perceive that, *primâ facie*, he ought not to admit that the brain is the mind, without the clearest and most direct evidence; for this weighty reason—that he knew a great deal about the mind, had been intimately acquainted with its powers and properties, when as yet he knew little or nothing respecting the brain. While, therefore, he recognises the *uses* of the brain and nerves, as a legitimate and interesting object of physiological inquiry, he clearly perceives that, merely for the purpose of extricating himself from the dilemma his opponent is attempting to force him into, it is one he is no ways particularly concerned to pursue.

Were it my present object to discuss what are the uses of the brain in the animal body, I should have no objection, with Dr. Elliotson, to allowing that the brain, besides other purposes which it subserves, is the organ of the mind; provided we agreed to attach to the term *organ*, in this relation, a modified meaning. This proviso would be necessary; for if we say that the brain is the organ of mind, and the lachrymal gland is the organ of tears, attaching the same meaning to the term *organ* in these different connexions, we fall into palpable error; and why? Because, while it is matter of fact, a thing not admitting of dispute, that the use or function of the lachrymal gland is to separate from the blood the tears, we are not warranted in affirming of the brain that its in-



disputable use or function is to separate from the blood, mind—to produce, in any way, mind from matter, or even at all to *produce* or *originate* mind: consequently the brain is the organ of the mind, in a manner, and *in a sense*, totally different from that in which the lachrymal gland is the organ of the tears.

Let us briefly inquire (ought I not rather to say conjecture?) in what respects the brain and nerves are to be regarded as instrumental in the operations of the mind. The nerves appear to be instrumental in sensation, in the widest sense of that term; visible objects the mind perceives by the instrumentality of the optic nerves, odours by the olfactory nerves, sounds and rapid bodies by the nerves appropriated to the senses of hearing and taste; and touch, heat, cold, muscular conditions, a great variety of sensations in the stomach and alimentary canal, and in the other systems of organs in sickness and in health, by means of nerves and of certain prolongations of the spinal marrow, extending within the cranium. Unquestionably the phenomena of sensation in the animal kingdom, with, perhaps, a few exceptions, is co-extensive with the endowment of nerves; and defect in the sentient power is found to accompany a morbid state of the nervous structure. It is likewise no less true that volition, in producing the infinite variety of muscular motion, acts by certain portions of the spinal marrow, and certain nerves which exist for this special office. The brain, indeed, we are taught to believe, according to the most recent discoveries (if the inferences drawn from revolting experiments performed upon living animals, are, in the present state of our knowledge, really entitled to the name of discoveries,) is necessary, “not so much that the mind may feel impressions, as that they may be remembered and availed of for useful purposes, not so much that volitions may act as stimuli on muscles, as that acts of volition may be so excited as to produce regular and voluntary actions under the guidance of desires and of judgment and experience, as distinguished from blind instinct.”\*

\* See Dr. Allison's “View of the Progress of Medical Science in the present Century,” in the *Cyclop. of Practical Medicine*.

Thus the brain, it should seem, is the centre, where, by the instrumentality of nerves of sense and of portions of the spinal cord, the mind receives all manner of impressions of bodily conditions, and of objects without; as likewise the centre whence, by the instrumentality of a different set of nervous prolongations, it moves the muscles in using the hands, in walking, standing, running, leaping; in the motions of the eyes, in eating, in speaking, and in thousands of minor acts which are continually being performed, and are too numerous even to be recounted.

Seeing, then, the mind obtains its knowledge of facts relative to the external world, by the instrumentality of the nervous substance, is there not reason to infer that in *conception, memory, recollection*,—i. e. in retaining present perceptions and in recalling such as are past—*the mind employs the same kind of nervous instrumentality as that by which it in the first instance obtains them?* A large number of facts seem to warrant an affirmative answer; for it is well known that confused perception, and partial as well as complete losses of memory, are frequent consequences of diseases affecting the brain; as likewise, in some degree, of that induration of the brain which occurs in extreme old age. I remember conversing with a gentleman, who, having had a severe attack of fever five or six years before, still remained in entire oblivion of all the events of his life previous to his illness. He was a widower at the period of the seizure, but he had no recollection of his wife. In one instance only did he imagine that he obtained a glance of the past. On paying a visit to the house where he resided before, and at the time the fever took him, he entered one of the apartments, and instantly felt a persuasion that he had been there before. Whether or not perfect recollection has in this instance returned, I am unable to say. Some persons, again, after an illness or an accident affecting the brain, have forgotten for a time the language they were in the habit of speaking, and commenced speaking a language they formerly learned, but had apparently ceased to remember. Others have forgotten the names of certain objects, or the names of certain classes of objects. The

variety of affections of this nature is, indeed, very great. The student will find an account of them, written with much discrimination, in “Abercrombie’s Inquiries concerning the Intellectual Powers”; a work chiefly designed for students of medicine, and worthy of their most attentive study. In old age, when the brain loses that softness which is probably the necessary condition of fitness for the perfect exercise of memory, perception and memory, and, as a consequence, attention, are the faculties which become defective; the mind acquiring with great difficulty fresh knowledge, and, with no less difficulty recalling the old. Hence ensues inactivity of mind, which being accompanied by a feeling of diminished muscular vigour, of general infirmity, of diminished power to impart or to receive pleasure, ends but too often in the melancholy spectacle of habitual discontent; the judgment and certain classes of the emotions still remaining *unimpaired*. Were this line of inquiry to be pursued as far as it might perhaps fairly be, it would, I think, be made to appear that delirium and coma, and a large proportion of mental diseases, admit of being traced to modifications of disordered perception and memory; and, it is to be supposed, to some species of morbid affection of the nervous substance, instrumental in the production of these mental states.

Admitting that this view of the instrumentality of the nervous substance is worthy of regard (as I apprehend it is,) if we reflect how incessantly the mind is receiving an infinity of impressions from the world around, by means of the senses alone, and new ideas by reflection, aided by the senses—ideas also from testimony in reading and in conversing, and ideas in reverie and dreaming—the number of orders it is ceaselessly sending through the nerves to the motive organs; and the almost as ceaseless demands it is making on the brain for the reproduction of perceptions, in musing, in deliberate reflection, in public speaking, in conversation, in the different kinds of literary composition, in the transaction of business, and in practising the useful and elegant arts—perceptions which are numberless as the sands on the sea-shore—we discover



that the brain is exceedingly well employed, even were it a larger organ than it is. In fact, that if the brain perform merely the work which has now been assigned to it, it must be allowed to be, beyond comparison, the busiest and best employed organ in the body, without its needing to have imposed upon it the additional exercises of volition, judgment, imagination, emotion; none of which, as mental states, are, so far as is known, manifested by the instrumentality of organic processes.\*

Should it, however, ultimately appear to be established on the basis of physiological experiment, and this in the progress of science may occur, that every manifestation of mind, without exception, is accompanied by an organic process,† this would be insufficient to secure general assent to the author's proposition, that it is the brain which thinks. An intuitive truth does not lie at the mercy of an experiment. At the present time it is a fact universally admitted, that the mental state we call *sensation*, is, in every instance, accompanied by an organic process; and yet few, I presume, bring themselves to believe that it is the nervous organ that feels. Who has ever brought himself really to believe, because the optic nerve is the instrument in seeing, that it is the optic nerve which sees? The impossibility of believing (to say nothing of *proving*) that the mind which feels and recollects by the instrumentality of the nervous substance is itself the same identical nervous substance, admits of easy and convincing illustration. I will mention one example. At night, after long-continued and extreme fatigue, I find it to be my duty to examine and rectify an entangled account which has relation to a great number of intricate extensive transactions, of different dates. On making the attempt, I find myself unequal to the task: the power of attention is wanting. I endeavour to recal

\* It affords me much pleasure to refer the reader to "Prichard on the Vital Principle"—a work containing many views, however, which I cannot assent to—for much lucid discussion on the instrumentality of the nervous system in the operations of the mind.

† "It is questionable whether an embodied soul ever so much as thinks one thought, or has any exercise at all; but there is some corresponding motion or alteration of motion, of the fluids [animal spirits] in some part of the body."—*President Edwards on Religious Affections*. Part II., Chap. 2.

a variety of perceptions which are necessary in the commencement of my labour, but in vain; my thoughts do not flow in the usual trains, and every effort at recollection recalls only confused masses of perceptions, which disperse and are succeeded by others equally confused. The duty is not imperative; I might, if I chose, postpone it till another time, but I say to myself, No; I am determined the account shall be rectified before I sleep; I will not give way to lassitude. I hereupon rise, walk briskly about, and *resolve* that I will not be foiled. What happens? I conquer. The mind regains the mastery. It compels the wearied brain and other organs to obey, and once more exercises its powers in conscious triumph. Would it be rational to say, in this instance, that the mind, which triumphs over the lassitude of the nervous organ enforcing obedience, is merely that organ triumphing over itself,—the living brain compelling the obedience of the same living brain?

To assert then, that it is *obviously* the brain which thinks, is unphilosophical; because it is to trifle with the nature of evidence, the assertion being incapable of proof by any known method of observation and reasoning. Perhaps it may be said, that if it cannot be actually proved that it is the brain which thinks, it may be shown to be probable. To this notion it is sufficient to reply, that it will require a wonderful amount of proof, and that the proofs be marshalled in some perfectly novel manner, to render it even in the lowest degree probable; because the fact assumed is, as we have seen, altogether repugnant to the natural principles of belief. Before I can admit, therefore, that the living brain is the mind, I must be prepared to believe that what I, and every one else, intuitively reject, may notwithstanding be true: in a word, that the fundamental laws of human belief are of less authority, than a disputed inference in the unsettled, and unsatisfactory science of animal physiology.

But a thousand facts demonstrate, as I have fully admitted, the intimate connexion which subsists between the mind and the brain; the dependence of the mind in order to the exercise of its faculties on the integrity, in



general, of that organ ; and that certain conditions of the nervous system, springing from age, race, education, and the like, are attended by corresponding modifications of mind. These and other arguments of the writer, in favour of what I presume to call his hypothesis of the mind's materiality, remain for examination.

## DR. ELLIOTSON'S ARGUMENTS TO PROVE THAT IT IS THE BRAIN WHICH THINKS.

I have now in a cursory way examined Dr. Elliotson's proposition, that it is the brain which thinks as clearly as that it is the liver which seeretes the bile, and have endeavoured to show that such a proposition can never be established, for a variety of reasons, but chiefly because it is opposed to the fundamental laws of human belief. Nevertheless, I conceded, that when stated as an hypothesis it admits of being supported by a number of plausible arguments. To these arguments, as advanced by Dr. E., I would now direct the reader's attention.

“The brain thinks, and feels, and wills.”\* “To call the human mind positively a ray of the divinity appears to me absolute nonsense. Brutes are as really endowed with mind, with a consciousness of personality, with feelings, desires, and will, as man. Every child is conscious that it thinks with its head; and common language designates this part as the seat of mind; e. g. a stupid person is honoured with the expressions numbskull, thickhead, &c. Observation shows, that superiority of mind in the animal creation is *exactly* commensurate with superiority of brain, that activity of mind and of brain are *co-equal*, and that as long as the brain is endowed with life, and remains uninjured, it, like all other organs, can perform its functions, and mind continues; but, as in all other organs, when its life ceases, its power to perform its function ceases, and the *mind ceases*; when disease or mechanical injury affects it, the mind is affected; inflammation of the stomach causes vomiting—of the brain, delirium; a blow upon the loins, suppression or alteration of the urine; a blow upon the head stuns; if originally constituted defective, the mind is defective; if fully developed and properly acted on, the mind is vigorous; accordingly, as it varies with age, in quality

and bulk, is the mind also varied. The mind of the child is weak and very excitable; of the adult, vigorous and firm; and of the old man weak and dull, *exactly* like the body; and the character of the mind of an individual agrees with the character of his body, being equally excitable, languid, or torpid, *evidently* because the brain is of the same character as the rest of the body to which it belongs. The female mind exceeds the male in excitability as much as her body. The qualities of the mind are also hereditary, which *they could not be* unless they were, like our other qualities, corporeal conditions; and the mind is often disordered upon the disappearance of a bodily complaint, just as other organs besides the brain are affected under similar circumstances. The retrocession of an eruption may affect the lungs, causing asthma—the bowels, causing enteritis—or the brain, causing insanity. Phthisis and insanity sometimes alternate with each other, just like affections of other organs. The laws of the mind are *precisely* those of the functions of all other organs: a certain degree of excitement strengthens it, too much exhausts it, physical agents affect it, and some specifically, as is the case with other functions; for example, narcotics. The argument of Bishop Butler, that the soul is immortal and independent of matter, because in fatal diseases the mind often remains vigorous to the last, is *perfectly groundless*; for any function will remain vigorous to the last, if the organ which performs it is not the seat of the disease, nor much connected by sympathy, or in other modes, with the organ which is the seat of disease.”\*

It is not my intention to scrutinize minutely all the proofs adduced in these passages, although I think it might be shown that some, perhaps, ought to be rejected, that others are overstated, and that several are trifling. A few remarks on each will suffice to convey the opinion I am led deliberately to entertain of the value and character of the whole.

*First.* “Brutes are as really endowed with mind, with

\* Page 37. It is only fair to remark, that the words in italics are not in that character in Dr. Elliotson’s text.

a consciousness of personality, with feelings, desires, and will, as man." Admitting this for argument's sake (although I question if it would be easy to prove a brute possessed of a consciousness of personality which supposes the united exercise of reflection and memory) what follows? How does the fact that brutes possess mind prove that, in man, the brain is the mind? I see not how unless the writer means to assume that it is certain—a thing universally admitted—that mind in a brute is nothing besides the brain. So far from granting such an assumption, I think there is reason to infer that brutes possess an immaterial principle or entity. I say, reason to *infer* this from observation; for I want, in reference to the nature of brute mind, other two kinds of evidence,—viz., consciousness and testimony, which I possess with regard to the nature of the human mind. It ought to satisfy the inquirer, if I am able to show that, in man, *that* which thinks is not the brain, without its being necessary that I should entangle myself with an extraneous question concerning the nature of inferior orders of mind. My knowledge of the mind of brutes is both inexpressibly limited and imperfect; even the end for which the greater proportion of animals exists at all, is, I confess, utterly beyond my comprehension. Although, therefore, I might be excused if I were to pass without notice this argument of Dr. Elliotson, I choose rather to entertain it, feeling that to deny to brutes the possession of an immaterial principle, in the face of a degree of evidence for the fact, *merely* because it may shock the prejudices of the vulgar to admit that brutes have souls, is unworthy of intrepid reason.

*Second.* It is incorrect to assert, that "every child is conscious that he thinks with his head"; the fact being, that every person, capable of reflection, is conscious that it is with his mind that he thinks. It is only by experience that he at length is aware that the head is the chief seat of the mind. Were the four senses which are placed in the head—hearing, sight, smell, and taste, situated more remotely from the brain, suppose on the thorax (and by imagining the prolongation of their nerves



this is conceivable) probably it would not be so readily discovered, as it now is, that the head is in a peculiar sense the instrument of the mind. It is from having to move the head to accommodate the eye in seeing, and the ear in listening, and by the infinite variety of other movements the head is made to perform in the exercise of these senses—the prime ministers of the mind—together with the sudden interruption of the mental operations produced by blows on this part of the body, that every one insensibly acquires the conviction that thought is there. A person is not, therefore, conscious of thinking with his head; but he infers that the conscious mind employs the head in its operations.

*Third.* "Superiority of mind in the animal creation is *exactly* commensurate with superiority of brain." This is an incautious assertion, if by "superiority" is to be understood largeness, or some particular form of the head, since these are at present points confessedly of doubtful dispute, and likely so to continue. Besides, Dr. Elliotson is well aware that insects, the most reasoning, perhaps, of all the inferior creatures, have properly no brain, a slight enlargement of the upper extremity of the spinal marrow being all that stands for that organ.\*

*Fourth.* "Activity of mind and brain is coequal." If the writer believes, as he affirms, that it is the brain which thinks, what argument does he discover in the assertion that two names—brain and mind—implying the same thing, possess co-equal activity? which on his hypothesis, is as void of meaning as if a lapidary should announce, in reference to the same precious stone, that the hardness of the diamond and of the brilliant is co-equal! But if, on the other hand, it be not a settled point, and this Dr. Elliotson will surely allow, that the living brain is the mind; on what ground, supposing that the brain and the mind are distinct substances, could any one pretend to determine that they possess co-equal

\* In *vermes* and in *insects* "a ganglionic system can be distinguished, arising, in general, from what is called the spinal marrow, the superior extremity of which part, SLIGHTLY ENLARGED, constitutes the brain." See Blumenbach's *Comparative Anatomy*, by Lawrence, page 204. Dr. Elliotson, as an instance of reason in brutes mentions an anecdote of the wasp on the authority of Darwin. Also see Note B.

activity? or by what signs detect inequality in this respect?

*Fifth.* "When disease or mechanical injury affects the brain, the mind is affected; inflammation of the stomach causes vomiting—of the brain, delirium; a blow upon the loins, suppression or alteration of urine; a blow upon the head stuns." How convenient is the term "affects!" The mind is affected by a blow upon the head, and the kidney is affected by a blow on the loins; therefore it is the head that thinks, as obviously as that it is the kidney that secretes the urine; a blow equally affects both, and thus is established a sound and perfect analogy between the two organs! But many things in their natures the most widely different are liable to be affected by the same cause: moisture "affects" the tone of a violin, the condition of a seed, the polish of a scimitar, the gravity of the atmosphere, the sensations of a man; hence to be "affected" is no proof of there being analogy in the nature of the different affections. Although it be true that inflammation of the brain affects the mind with delirium, and inflammation of the stomach affects that organ with vomiting, what conceivable analogy is there between delirium and vomiting? Surely it is not on such reasoning as this that the student ought to admit the proposition that it is the brain which thinks! Doubtless it is true, in general, that disease and mechanical injury of the brain ultimately impair, suspend, or derange the operations of mind; but every experienced pathologist is aware, that the effects on the mind, resulting from diseases of the brain, are wonderfully little uniform in their character. There is evidence that, in numberless cases of disorganizing disease of the brain, the mind remains apparently perfect until the malady has existed for weeks, or even for months, and produced extensive ravages. The opinion of so eminent a pathologist as Dr. Alison, in regard to the influence of organic cerebral disease on the mind, is well worthy of attention. "The very same kinds of alteration of the mental faculties," says Dr. Allison, "have often been observed from disease or injury of very different portions of the brain; and again, large and

various portions of the hemispheres of the brain have been found, in other cases, manifestly injured, or even destroyed by disease, without perceptible alteration of the mental faculties, almost to the moment of death. Experiments and pathological observation would seem to indicate, therefore, that the manifestation of these mental phenomena depends not so much on the mere presence of any particular quantities of the nervous matter of the hemispheres, or the forms which it presents, as on some other conditions in that nervous matter.”\*

I am far from intending to maintain that the nervous system is not the organ by which the mind, to a certain extent (we know not to what extent,) operates; or that the same system is not necessary, in some inscrutable manner, to the manifestation of mind, as the attribute of a human being; but the deliberate opinion of Dr. Alison may serve to caution the student against reposing implicit confidence in vague comparisons between the disorders of the mind and the disorders of a secretory gland.

Granting that disease, malformation, and mechanical injury of the brain, variously affect the mind (for these are established facts,) we ought not to forget that there are other facts of an opposite and countervailing kind, in reference to the influence of the mind upon the brain, and the whole body, equally well established. If it be true that cerebral disease disorders the mind, the converse is equally true—namely, that certain purely mental affections disorder the physical frame. Emotions and other mental states—emotions, it may be, not excited directly by external circumstances, but originating in a process of reasoning, will, even in the most vigorous and healthy person, produce bodily disease, or sometimes death itself. Here it is obvious, that if, in delirium or stupor, resulting from disease or injury of the brain, the state of the bodily organ stand in the relation of *cause* to the mental disorder, equally true is it that in such disorders as syncope, convulsions, diarrhœa, palsy, fever, abortion, produced by sudden emotions, the *cause* is not a bodily but a mental state; the proof of which is not inferential, as in the in-

\* Alison's Physiology, &c. &c p. 234.



stance of a mental disorder ascribed to cerebral disease as its cause, but matter of distinct consciousness. In disease of the brain, attended by delirium or insanity, a doubt may be insinuated as to whether the cerebral disease is the cause of the mental disorder, seeing that violent affections of the mind oftentimes result from disease of distant organs in the absence of disease of the brain; but in the instance of syncope, or any other disorder suddenly produced by emotion, no doubt can be insinuated; because the person affected is conscious (it is not an inference) he is conscious that the cause of his bodily disorder—the first phenomenon in the series—was a mental state. In a political revolution, or in a great commercial crisis, how numerous the victims of disease and death, caused solely by mental affections! The practical observer of life knows well that mortified vanity, rage, critical suspense, disappointment, sudden poverty, bereavement of those who are dear, remorse, are every day producing their dreadful effects; in such forms, too, as even the page of fiction most inadequately portrays. M. Georget, the celebrated writer on madness, remarks, that “among one hundred lunatics, ninety-five at least have become such from the influence of affections and moral commotions.”

It is not alone, however, to states of mind as causes of disease that we are to have regard; they produce effects of a curative and salutary kind. Restoration of health, the incredible endurance of toil, of hunger and thirst, of solitary imprisonment, of the extremes of heat and cold, calmness in the view of a violent death, resistance of the most powerful contagions, are all often witnessed as the effects of temporary states of mind influencing the bodily frame. These states of mind, it is well worthy of remark, will sometimes be strengthened in a tenfold degree in a moment, or as instantly annihilated, by a single word of hope or of discouragement whispered in the ear, or by a single thought suggested in the course of solitary reflection: the instantaneous result being increased boldness and firmer determination; or irresolution, feebleness, and despondency.



Upon the whole, therefore, it is clear that the fact that injuries of the brain disorder the mind, cannot be admitted as proof that mind is the function of the brain; seeing that purely mental states can equally disorder the brain and the entire body, and, indeed, affect the body in a great variety of ways infinitely more wonderful than bodily states ever affect the mind.\*

*Sixth.* "The character of the mind of an individual agrees with the character of the body, being equally excitable, languid, or torpid; *evidently* because the brain is of the same character as the rest of the body to which it belongs." Whether what is here asserted to be *evidently* true, is true or not, cannot be proved. To suppose that the brain might be naturally torpid, and the rest of the body naturally excitable, or to suppose the opposite of this, appears to me to involve something like absurdity. As little meaning is there in the assertion that "the female mind exceeds the male in excitability as much as her body;" for if the mind is only the property of the body, the remark is needless; and if the mind is not a corporeal property, by what means is excitability of the body, apart from excitability of the mind, to be discovered? Surely it is natural to expect that the body and the mind of the same individual will be adapted for the production of union and harmony, whether the mind be a property of the brain or something different.

*Seventh.* "Qualities of mind could not" be transmitted, if they were not "corporeal conditions. How does Dr. Elliotson know? Every one *knows* that qualities of mind do often descend from parents to their children, but no one can pretend to *know* that mental qualities are actually corporeal conditions. The "could not," therefore, is not altogether in the true spirit of philosophical caution.

*Eighth.* "The laws of the mind are *precisely* those of the functions of all other organs:" of those of the kidney, for example. Does the writer mean that the laws of volition, or of the religious emotions, which are laws of the mind, are precisely similar to those which re-

\* See Note C.

gulate the functions of the kidney in the secretion of urine? If this is not his meaning, I know not what different construction the passage admits of. Perhaps he meant that certain only of the laws of the mind are precisely those of the functions of all other organs; for here are his proofs:—"The laws of the mind are precisely those of the functions of all other organs; a certain degree of excitement strengthens it, too much exhausts it, physical agents affect it; and some specifically, as is the case with other functions—for example, narcotics." The term "excitement" here plays the part that "affects" did in a former passage. A certain degree of excitement—the company and conversation of an agreeable friend—strengthens the mind precisely as a certain degree of excitement—the operation of a gentle diuretic—strengthens the kidney. Too much excitement—for example, the fear of shipwreck or bankruptcy—exhausts the mind precisely as elaterium exhausts the kidney. Such a physical agent as opium "affects" the mind, causing sleep, dreaming, elysian visions, or tartarean horrors; and the same drug "affects" the kidney, causing the urine to be red and scanty. I disclaim the desire to draw from the writer's arguments ridiculous conclusions; but, unless I am deceived, this result is inevitable; for surely no dispassionate reasoner will contend that the terms "excitement," "strengthens," "exhausts," "affects," applied to the mind, have any analogous meaning when employed with reference to the kidney.

*Ninth.* "The argument of Bishop Butler, that the soul is immortal, and independent of matter, because in fatal diseases the mind often remains vigorous to the last, is *perfectly groundless*; for any function will remain vigorous to the last, if that organ which performs it is not the seat of the disease, &c." The words of the Bishop alluded to are, I presume, that often persons affected with mortal diseases are seen to possess "apprehension, reason, all entire; with the utmost force of affection, sense of character, of shame, and honour, and the highest mental enjoyments and sufferings, even to the last gasp"—facts which he imagines render it *probable* that such diseases

will not be the destruction of our reflecting powers. It is, perhaps, not so clear that the Bishop's argument is "perfectly groundless;" for every attentive observer must have noticed instances of persons in whom life was all but extinguished, combating with languor, manifesting at intervals lively emotion, and uttering the most weighty sentiments. In general this is not the case. Commonly the mental operations become languid as sensation and the power of voluntary motion decline, so that in the last hours of life, the mind, equally with the body, would seem to be falling a prey to the disease. The cause is obvious. The mind of most persons during health is, in a great measure, habitually under the influence of bodily sensations, the predominant bias having reference to "what shall we eat, and what shall we drink, and wherewithal shall we be clothed?" In others, however, in whom the reflective faculties, and the religious and domestic affections have been habitually cultivated, the last scene is very different. Here we often witness the torpid declining body compelled to give utterance, it may be in the feeblest accents or signs imaginable, to the most sublime sentiments and the tenderest feelings. There is an evident struggle against the influence that is sealing up the senses. Perhaps there is a wish to bear a dying testimony to the verity of religious hope, to utter a last word of affectionate advice, or to express dissent from an obnoxious proposition. In such a case we may witness the mind *voluntarily* and *deliberately* striving to collect and concentrate its powers for a last effort—attempting again and again, it may be unavailingly, to utter something, there remaining obviously the power to *will*. It is this war of the intellect against stifling pain, and the most overpowering languor and exhaustion, as life is ebbing,—one kind of nature striving to rise above, and for a moment triumph over a different kind of nature,—to which, doubtless, Butler refers in the passage of the Analogy Dr. Elliotson has alluded to. Whether or not the inference—that it is *probable*, (to represent it as *certain* is directly contrary to the Bishop's design,) on the strength of such evidence, that death will not be the de-



struction of our reflecting powers—is perfectly groundless, the reader who has studied the Analogy, and bears in mind the scrupulous, the timid caution of that wonderful writer, in all his deductions, may be left for himself to determine.

There is probably a source of confusion and fallacy in the mind of Dr. Elliotson, of which he is utterly unaware, arising from his allowing himself to imagine that those who argue for the mind's being an entity, must hold, as a thing of course, a variety of fanciful opinions concerning the nature and essence of mind. On no other supposition can I account for his bringing forward several of the arguments which have been already noticed. It would seem, he considers, that those who take the side of the argument I am endeavouring to support, hold the mind to be a spiritual, immortal, perfect, *quasi* angelic intelligence, of which almost every thing ought to be predicated that might be predicated of an angel. I, however, beg to disclaim all such hypothetical fancies, as, indeed, I before disclaimed them. My opinions of the nature of mind I am desirous of forming with the same caution and deliberation I exercise in the investigation of other subjects; in proof of which, I allow, with Dr. E., that the mind varies with age; that, in a sense, it is weak, ignorant, and excitable in the child; vigorous and intelligent in the adult; and in the aged frequently—by no means always—comparatively dull; that it is greatly and variously affected by diseases and injuries of the brain, as well as strikingly influenced by innumerable other forms of material agency. I am further willing to allow that (revelation apart) I have not discovered evidence on which I can fully rest, whether it ought to be regarded as immortal, or as being of limited duration, like the body. But I am compelled to confess, that if it possesses any quality in common with organic matter, I am wholly ignorant what that property is. The facts Dr. Elliotson has adduced to prove that the brain is the mind, and a thousand other facts of a similar kind, may very properly, perhaps, be employed in overthrowing the fancies he *attributes* to theologians. Further than this, they do not serve his purpose.

Dr. Elliotson deprecates the idea that his opinions on



mind tend to materialism,—a doctrine which may be thus briefly defined: mind never being found but in conjunction with a brain, we ought, as philosophers, to conclude that mind necessarily exists in, and results from, that organ, unless it can be shewn to be incompatible with other known properties of the same substance.\* These, it is true, are not Dr. Elliotson's words; but several passages in his work evince that the sentiments differ little from his. For example, the qualities of the mind are "corporeal conditions." Again: "when the brain dies, the mind ceases." And further: "at death our being is utterly extinguished, and we go back to the insensibility of the earth, whence we were taken." But such sentiments are not those of a materialist: quite otherwise! "The assertion," says he, "that the mind is a power of the living brain, is not an assertion that is material: for a power or property of matter cannot be matter." In a former section, this notion that a property of matter—blueness, sweetness, or hardness—is not matter, but something superadded thereto, and, it is to be presumed, immaterial, was briefly noticed. It no doubt may be said that sweetness,—to take that property as an instance,—is not the name of a material thing, but merely the name of a sensation caused by matter; but this would be a mode of evasion leading to utter absurdity: for though it is true that a sensation of sweetness is not matter, but a mental state, nevertheless we instinctively regard sweetness as not existing in the mind, but belonging to the particular material body which causes in us this sensation: in a word, we mean that it is the material body which is sweet. To affirm that the sweetness is something different from the material body, is equal to affirming that every other property of matter is something different from matter, and that no such thing as matter is known to us; which every one feels to be absurd. If, therefore, the mind be said to be a property of the brain,—and this Dr. E. maintains,—the only meaning I am able to attach to such a proposition is, that when a person, by the help of his senses, (and how otherwise can he examine the *pro-*

\* This definition of materialism differs little from that of Dr. Priestley.

*perties* of a body?) examines the brain, he discovers mind—acquires the idea of mind, just as he perceives the property of sweetness when he examines the saccharine body by means of the organ of taste. However, be this as it may, to assert that the mind is a property of the living brain, is obviously equal to asserting that the mind is as much matter as the living brain is matter. Whether or not the living brain, or any other living organ, is more than matter, needs not again to be discussed. Possibly this explanation may be regarded as uncalled for repetition; but surely so grave a fallacy as that a property of matter is *something different from matter*, requires to be freely exposed, in order that this species of argument being stripped of the mystery which it appears is very ready to envelop it, the sophistical disputant may be prevented from taking to his usual refuge—mere words.

The opinions on mind which Dr. Elliotson would inculcate on the rising race of physiologists,—for it is to the student that his book will chiefly be acceptable—lead, by no, circuitous route, to Spinozism—the most odious of all systems of speculation, inasmuch as it is not one of pure Atheism, but leaves us a kind of Deity whom we must for ever abhor. Not that Dr. E. is himself an avowed disciple of this system,—that I am far from affirming,—but it is plain that his chief reason for regarding the brain as being the mind, differs little from the main argument of Spinoza. The former cannot conceive of mind without a brain, and Spinoza merely extends and amplifies the same principle: for, perceiving nothing besides matter to exist, he infers that nothing but matter does exist. Indeed, if the evidence for mind's existence as a substance or entity be regarded as baseless or insufficient, merely *because* we have no experience of its existence dissevered from organization, then is the existence of a creating, sustaining, spiritual intelligence, distinct from “the things which are seen” incapable of satisfactory proof; since it may be fairly argued that if the medullary substance, brain, is endowed with power to feel, think, and will, and, in the exercise of this power, operates on matter (as we know the mind does) with wonderful skill and extensive

effect, it is probable that the material universe possesses a similar, though infinitely ampler power: thus the brain being regarded as the mind, the universe will necessarily be regarded as the Deity.\*

Dr. Elliotson wanders far, I presume to think, out of his proper line, when he enters on the inquiry as to whether revelation affirms that we are more than mere bodies,—a question requiring more space, and, perhaps, a greater fund of knowledge for its solution, than the writer of an elementary treatise on human physiology can be expected to afford.

In incidentally touching on points of human science or speculation, (and they are never touched upon otherwise than incidentally,) revelation employs chiefly, we have every reason to believe, the language of the unlearned of those times, without in a single instance pretending to enlarge our knowledge of such matters, which would have been wholly foreign to its avowed object—the making known to men, the learned and the unlearned alike, the will of God for their salvation. Nevertheless, in many passages our Saviour intimates, it might seem casually, the conscious existence immediately after death of such as were then, as respects their bodies, dying, or already dead.† And St. Paul, there can be no question, believed that the death of his body would not suspend the enjoyment of his conscious mind. “While,” says he, “we are at home in the body, we are absent from the Lord,” affirming that he is “willing rather to be *absent* from the body, and *present* with the Lord.” Further, he expresses a desire “to depart and be with Christ, which is far better.” In a number of passages which authoritatively reveal the resurrection of the body, it is true the language presents great difficulties, and might, if taken separately and alone, be supposed to favour the belief that

\* “Spinoza was persuaded that something must have existed from eternity; but perceiving nothing in the world but matter, concluded that nothing but matter can exist. He asserted, therefore, that there is but one substance, and this substance, with its attributes and modes, infinite and self-existent.”—*Crombie's Natural Theology*, vol. 1, p. 341.

† Matt. x. 28. Fear not them which kill the body but are not able to kill the soul; but rather fear him which is able to destroy BOTH SOUL AND BODY in hell. Also Luke xvi. 27, 28, and xxiii. 43—46. These passages, when duly weighed, will be found, I presume to think, decisive of the argument.



all we are descends at death into the grave. It is unquestionable, however, from the passages of scripture which have been quoted, (and the reader may easily augment their number, by selecting parallel passages,) that the New Testament writers, without pretending to determine whether the mind be or be not material, *admit* and *assume as true* the common belief of all ages, that the mind of man continues in conscious existence after the dissolution of the body.\*

It may be said, "what if it be true that medullary matter thinks?—If, in fact, it does so, it must be the best possible substance for thinking: the question is one, therefore, of little or no importance." Some such argument has been employed, but it possesses not even the slender merit of being plausible; for on similar grounds the Atheist might argue that the question as to the existence of a God is trivial, it being reasonable to infer that if, in fact, there is no God, the universe is better without a presiding power. The question is not at all whether it be best to believe what is true, but whether it be proper to reject the evidence of our own consciousness, in order to admit a gratuitous hypothesis, which being admitted, tends to heap contempt on human nature, and is directly opposed to the consoling belief of thousands of the despised and the miserable:—to that belief which the ill-favoured, the misshapen, the loathsomely and the incurably diseased (to mention no other forms of misfortune, and to allude to no higher considerations) naturally cling to, that there is *that* within, which, partaking in no degree of the repulsive defects of the body, entitles them to their proper rank in society, or, at all events, secures to them the sympathy and the respect due to a moral and intellectual nature, which, not an abscess or a tubercle in the brain, but vice and ignorance alone, can really degrade.

\* See Note D.



REMARKS ON LIFE: BEING AN EXAMINATION OF DR. PROUT'S HYPOTHESIS OF AN ORGANIC AGENT, AS ADVANCED IN HIS GULSTONIAN LECTURES AND IN HIS BRIDGEWATER TREATISE.

Intelligently viewed, how different a thing is a plant or an animal from a mass of stone! "To exist in successive generations, which one after another rise, flourish, and decay; to begin from ova or seeds, to grow to a definite extent, by means of the accretion of particles from the surrounding elements imbibed by peculiar organs; to assume a particular form, to subsist in perfection for a definite space of time, and then, after giving origin to new germs or rudiments destined according to certain laws to secure the preservation of each tribe, to fall at length a prey to the dissolving powers of the external elements, are properties common to all organised beings; common alike to the lords of the creation, and to the potherbs and legumes which contribute to their daily food."\* The commencing of organized beings, for the most part, in ova and seeds, may well excite our admiration. An ovum is apparently little else than a small atom of albumen, and a seed only an atom of starch, and one kind of ovum and one kind of seed differs little or nothing in its perceptible qualities from every other ovum and every other seed; yet from one ovum is evolved the mouse, from another the elephant, from another man: and from one seed springs the cress, from another the oak.

Terrestrial matter may be considered as existing in two great departments—the organic and the inorganic. The former consisting of animal and vegetable bodies, living, dead, and in various stages of decay; together with the productions of animals and vegetables, as milk, honey, gums; and the latter of all such bodies as, in their structure and

\* Prichard on the Vital Principle, page 3.

composition, bear no traces of having been subjected to vital processes. It is, however, to be observed that organic substances without life, including such as are the products of secretion, rank, in a sense, with those which are inorganic; being, as they are, subject to the laws of chemistry.

Inorganic bodies, in general, are disposed to assume crystalline forms, having flat surfaces and right lines, and, hence, ridges and angles; while organic bodies have forms, more or less rounded or branched and articulated. In structure the difference is equally remarkable. Inorganic bodies are simple aggregations of similar parts, while living organic bodies are heterogeneous, that is to say, of no regular or uniform composition; consisting of solids and liquids, formed into roots, sap, woody fibre, bark; or into nerves, muscles, bones, blood, &c. With respect to their elementary composition they also differ, for while a compound inorganic body may consist of only two elements, always combined according to the laws of quantity, an organic body is composed of at least three elements, generally of many more, and these are not united in definite but in uncertain proportions. Again, the inorganic compound admits of decomposition by art, and also, in general, of recomposition by the same means; but the dead organic body, which can be easily decomposed and resolved into certain elements, cannot by any effort of art be recomposed. Further, an inorganic compound has no tendency in itself to change; remaining for ever the same unless exposed to fresh chemical powers. But in regard to the organic body, as soon as its vital actions cease, changes, more or less tardy, spontaneously ensue, called fermentation and putrefaction, which dissolve the substance, so as ultimately to destroy its organic characters.

Notwithstanding these points of difference, organic bodies are made up of known elements belonging to the inorganic kingdom; most vegetable bodies consisting essentially, if chemical analysis may be trusted, of carbon, hydrogen, oxygen (a few only contain azote) with a small admixture of other elements, as phosphorus, a few of the

earths, metals, &c.; and animal bodies, consisting of carbon, oxygen, hydrogen, and azote, with small portions of sulphur, phosphorus, various metals, &c. These are the elements of vegetable and animal bodies, from which again are formed certain substances called staminal principles. The staminal principles of all organised bodies, exclusive of incidental elements, such as sulphur, phosphorus, calcium, iron, &c., are the saccharine, compounded of carbon and water; the oleaginous, composed of olefiant gas and water; and the albuminous, whose elements have not yet been precisely determined.\* It is worthy of remark, that the inorganic kingdom consists of fifty-four elements, while not more than nineteen are detected in an analysis of organic bodies.

To the chemist nothing can be more obscure than is the composition of an organised body, I mean, of course, a dead organic body, for the analysis of a living substance is beyond his powers; the moment it becomes the subject of his analysis it is no longer vital but chemical. Substances, apparently the most dissimilar, are found to yield the same elements, and these elements, nearly in the same proportions. Sugar, starch, and lignin, or the woody fibre are certainly extremely dissimilar in their sensible qualities; and yet in composition, the chemist finds them to be almost identical. What substances again can be more unlike than sugar and vinegar? Nevertheless sugar is a compound of carbon and water in certain proportions, and vinegar consists of the same ingredients in very slightly different proportions. It has been insinuated, indeed, that the living organized body is not composed at all of such elements as the chemist obtains in his analysis of organic matter, but of elements of which these supposed elements are compounds. There is reason for believing that the vital powers produce certain substances supposed to be elementary, for example, carbon and calcium, from other substances which, at present, are themselves likewise regarded as elements.† Upon this point Dr. Prout

\* Prout's Bridgewater Treatise, page 475.

† Whence is the lime derived which enters into the composition of the bones of the chick *in ovo*, seeing that none is to be detected in the material which



freely admits the imperfect state of our knowledge, intimating that it is probable that many substances, now viewed as elements, are composed and decomposed by the "organic agent."

Waving, however, this doubt, as to whether our knowledge of organic chemistry is actually worthy of mention, and adverting to the somewhat startling fact, before stated, that such dissimilar substances as sugar, starch, and the woody fibre, are found to yield the same elementary products, it need not excite surprise that chemical skill is bewildered in dealing with the organic department of matter; particularly when it is further considered that the chemist has never succeeded in forming or even in imitating the meanest excrementitious product of vital action. It might be supposed that a seed, say an acorn, was not a very impracticable substance: it has been analysed, and its constituent elements have been ascertained, as was supposed, with accuracy; but the reproduction from those elements of an acorn has never, that I am aware of, been announced. The chemist, therefore, cannot, it is evident, predict concerning a vital process as he can with reference to a chemical one.

Respecting most processes in chemistry, he can predict. He can, for example, foretel what will take place when carbonate of potassa is added to a solution of sulphate of zinc. He can foretel what kind of decomposition will ensue, and what will be the characters of the new compounds. But concerning the germination of an acorn, he cannot thus predict. He cannot foretel what kind of tree it will send up: whether it will be tall and straight, or spreading and crooked; whether it will grow to be fifty or an hundred feet high, or how long will be required for it to grow to a particular size. He may, from experience, predict concerning some of these circumstances with, perhaps, a slight approach to probability, but that is all he can boast. He predicts, it is true, con-

nourishes the chick? Again, whence come the immense quantities of the same substance which testaceous animals secrete in the production of their shells, it being perfectly clear that the food of such creatures does not consist, in any proportionate degree, of lime? In these cases, we are left to infer, that the *supposed* simple substance, *calcium*, is formed (not separated *merely*) from the fluids of the animal body by that vital process called secretion.



cerning both vital and chemical processes only after experience—but there is this remarkable difference—he can arrange the conditions required for a chemical process, and can foretel, with mathematical certainty, the result; a species of power and foresight no one will pretend to with respect to a vital process. No one will pretend that he is able to bring together the elements of an acorn so as to produce the identical seed; as little will he take upon him to predict, with any degree of confidence, of a given acorn that it will really sprout, and not, as happens with a large proportion of seeds in general, die in the ground.

There is a kind of unity in a living being—a certain dependence of each particular part and process upon the whole—to which nothing in an inorganic body, where every fragment is independent of the remainder, has any analogy. It is this unity which baffles all our attempts to predict respecting the precise condition of a living being at any instant of time. Every living being, whether plant or animal, may be said to be the slave of innumerable circumstances which are continually operating; and every change which occurs, however slight, is a new condition not of a part only, but of the entire being. So infinite, indeed, in number, variety, complexity, are the changes,—a great proportion of them contingent, to which a living organic being is constantly liable, that probably, no created mind, were it made acquainted with the precise condition of such a being, at this moment, could pronounce with certainty respecting the condition of the same the moment after. Added to this unity or individuality as regards all its parts, and this marvellous liability to mutation as respects its general condition, there is a power of resistance to extreme or hurtful changes, of accommodation to new external circumstances, and of self-reparation after injuries, which, when viewed in conjunction with the ordinary vital processes—digestion, absorption, circulation, secretion, deposition—and with the unchemical nature of the body as a compound of matter, have led many to the belief, that there resides, in every living organic creature, an architect or agent; in other words, that every such creature (for instance a tree),

has duality of being, viz., the organic agent and the organised body.

The various opinions respecting this agent, the builder and conservator of the organic frame, will be found fully detailed in Barclay's work on Life and Organization. It is with Dr. Prout's opinion that I am at present concerned, he being the latest writer of note who has unreservedly contended for the existence of such an agent. "Let us," says Dr. Prout "attentively survey the most simple plant or animal: let us observe the actions, the changes, the modifications of form and properties it continually exhibits, and then let us seriously ask ourselves whether everything that we know will enable us to make even an approach towards an explanation of what we see. It is indeed true, that the plant or animal we examine is composed of charcoal and water, and of other ingredients with which we are familiar, that it is liable to be affected by heat, light, electricity, and by other inorganic agents. But it is perfectly ascertained that these elements and agents, out of an organised body, and left entirely to themselves, never would or could unite either in virtue of their own properties or from accident, so as to form any plant or animal, however insignificant. Are we not then compelled to infer, that within a plant or animal there exists a principle or agent superior to those whose operations we witness in the inorganic world, and which agent, moreover, possesses, under certain restraints, the power of controlling and directing the operations of these inferior agents? That this is a natural and just inference, no one who calmly views all the circumstances will even deny; and if the existence of one such agent be admitted the admission of the existence of others can scarcely be withheld, for the existence of one only is quite inadequate to explain the infinite diversity among plants and animals. Thus, in the words of the excellent Paley, there may be many such agents, and many ranks of them; in other words, there may be an ascending gradation of these agents, from that of the comparatively simple plant onward to that of the most complicated animal."\*

\* *Bridgewater Treatise*, by Dr. William Prout, F.R.S. Page 431.

Gulstonian Lectures Dr. Prout has unfolded still more plainly his views of the nature and powers of the organic agent. "In all cases," he remarks, "it must be considered an ultimate principle, endowed by the Creator with a faculty little short of intelligence, by means of which it is enabled to construct such a mechanism from natural elements, and by the aid of natural agencies, as to render it capable of taking further advantage of their properties, and of making them subservient to its use."\* Such is the opinion of Dr. Prout, which he has strenuously advocated in a number of passages of his more recent Bridge-water Treatise.

The reader will have remarked, that Dr. Prout does not contend that a plant or an animal is formed of any thing besides charcoal, water, and some other material ingredients. He admits that it consists of matter, as much as a chemical salt consists of matter; only he argues that while the salt has been formed by the powers of the elements which compose it, plants and animals are formed by powers extraneous to their component elements. Admitting, as I readily do, that inorganic elements, out of an organised body, and left entirely to themselves, never would or could unite, either in virtue of their own properties or from accident, so as to form a plant or animal, I do not perceive how the existence of organic agents is necessary to be assumed in the science of living action. On the contrary, I am persuaded that such an assumption, from its mysterious and bewildering character, is calculated to retard the study of this science.

What kind of entity or principle that is, which has powers little short of intelligence, it would require a super-human intellect rightly to comprehend. One is ready to imagine that no two kinds of entity can be more dissimilar in their natures than the intelligent and the non-intelligent. The organic agent must, of course, be supposed to rank in some grade intermediate—not intelligent yet nearer the intelligent than the non-intelligent, possessed of a faculty which, as it suggests the idea of

\* Gulstonian Lectures, by Dr. Prout. London Medical Gazette, vol. viii. page 261.



intelligence, must, as Dr. Prout thinks, be little short of intellect!

To me it appears extremely clear, that in assuming the existence of such agency as a mode of solving the problem of vital action, Dr. Prout merely shifts the difficulties which oppress him a little farther off, while, at the same moment, he interposes, between himself and these, a new and infinitely more formidable difficulty. For the powers and properties supposed to be possessed by this agent, whereby it operates on matter, the agent itself meanwhile eluding all cognizance, furnish a series of hypothetical phenomena, in addition to the real phenomena of life, which an inquiring mind, whether it will or not, is sure to seize upon as a subject of profitless and perplexing speculation. It signifies nothing that Dr. Prout deprecates all speculation concerning the nature of this agent. The mind of an inquirer is not to be thus restrained and controlled. Did Dr. Prout unequivocally allow that the organic agent possesses intelligence, the inquirer would be easily satisfied: for from analogy he would be led to regard this agent as an order of being most amazing in the variety and compass of its powers, surpassing the human intellect in an infinitely greater degree than the latter surpasses the intellect of the worm or the zoophyte. And the longer he pursued the comparison between the powers and resources of his own mind and those of this agent, the more irresistibly would he feel the conviction stealing upon him, that Dr. Prout's organic agent is no other than that great Being who alone, in the language of Scripture, is "wonderful in counsel and excellent in working."

For what is it which the organic agent is supposed by Dr. Prout to perform, that is not properly the work of the divinity? We may perceive what it is, in the estimation of this philosopher, if we will think of the human embryo of the size of the smallest maggot, apparently a mere homogeneous atom, which in the course of a few weeks grows to have a head and limbs; and, in a few months more, developes all the organs of sense, motion,



and digestion—in a word, the complete mechanism of the most complex and most perfect of the visible works of the creation; all which, Dr. Prout assures us, is effected not directly by the Deity but by a subordinate agent, possessed of a faculty short of intellect. Reason being thus denied to this intelligently-working agent, no wonder that the mind of an inquirer is excited, in order, if possible, to ascertain what is really the nature of the principle to which such anomalous powers are ascribed. On discovering, however, as he speedily does, that the very being of this agent is *assumed*; that he is called upon to *fancy* the existence of a non-intelligent principle, endowed with such powers, he naturally demurs at admitting the hypothesis. He asks by what means Dr. Prout has discovered that certain kinds of inorganic matter are not endowed with the powers manifested in vital action? How became he acquainted, he desires to know, with all the powers of matter under all possible conditions? Is he actually sure that the Deity could not, or for wise reasons, would not, confer upon it such powers as the term life expresses? Receiving no satisfactory answer to such queries (for I have no difficulty in assuming that he can receive none), the inquirer rejects the hypothesis as unworthy of much consideration, and proceeds to study the phenomena of vital action, as those of matter, precisely on the same ground as he regards attraction and repulsion as phenomena of matter.

Dr. Prout, I cannot but think, has been led to entertain this hypothesis of an organic agent, from having failed to obtain a clear and comprehensive view of divine causation. In his estimation, it is perfectly credible, without assuming the existence of demi-intelligent agents, that oxygen and hydrogen should unite to form water; and that masses of matter should attract each other with a force inversely as the squares of the distance: in a word, that the universe of inorganic matter should perform its inconceivably diversified and complex movements, mechanical and chemical, in obedience to laws imposed by the Creator. But no sooner does he contemplate the

phenomena of organic life than he discards this simple and sublime view. What he beholds in the evolution of a plant or an animal, in digestion, or in the reparation of a broken bone, he must needs explain in a different manner—by supposing the presence of an agent to which the Deity delegates the carrying on of these, the most refined manifestations of his power; as if the world of organic being was too much for the divine care; and as if the supreme mind, while attending to the great universe, needed to lean, in the minute affairs of vital action, on the help of subordinate agency! But surely since, on this hypothesis, it is necessary first to endow the organic agent with such varied and astonishing powers, and again to endow matter with correspondent properties, fitted to be acted upon by these, it would be easier and simpler, according to human apprehension, for the Deity himself to perform the work assigned to the agent in the same manner as he effects the revolutions of the planets, namely by the enforcement of certain laws.\*

Anticipating such objections as these, Dr. Prout has prepared a reply. “The means by which *that peculiarity of structure and of composition is produced*,” he observes, “which is so remarkable in all organic substances, like the results themselves, are quite peculiar; and bear little or no resemblance to any artificial process of chemistry.”† “In accounting, therefore, for the phenomena of life, it is *absolutely necessary* to assume the existence of some agency different from and superior to that which operates among inorganic matters.”‡ Why absolutely necessary, I ask, thus to assume the existence of a *superior* agency? It is true vital phenomena are peculiar, and appear to have little or nothing in common with those of chemistry. In the words of Sir H. Davy, “there can be no doubt that all the powers and agencies of matter are employed in the purposes of organization, but the phenomena of organization we can no more refer

\* See Note E.

† Prout's *Bridgewater Treatise*, page 436.

‡ *Ibid.*

page 438.

to chemistry than those of chemistry to mechanics." Granting this, I know not on what just grounds it is to be inferred, that in chemistry and in organization there exist two kinds of agency, the one superior to the other. On the contrary, I perceive merely two different classes of phenomena; for the powers or agencies exhibited in bodies, whether mechanical, chemical, or vital, I must be allowed to regard, until I have some degree of proof to the contrary, as nothing at all besides the bodies themselves. Let us not impose upon ourselves by the term agency. All material agencies are, in a sense, the same in kind, and of equal rank; it being impossible, as I apprehend, fairly to attach any other meaning to the term agency, whether we are speaking of a physical, a chemical, or an organic agent's operations, than that it is matter of a certain kind which has been discovered to be capable of producing certain changes. In my humble opinion, until we obtain a firm conviction of the truth of these simple views of nature, we shall never cease to confound words with things, as if the terms power, property, agency, when we are speaking of matter, expressed something more than the phenomena we discover by means of our faculties.

Of the agencies of matter, organic and inorganic, it is further obvious that we know nothing, except as learned by experience; our knowledge of what agencies matter may or may not exhibit, being in no sense intuitive. Fresh, unheard of properties of matter are being discovered yearly, and a great authority tells us that "among all the possible combinations of the fifty or sixty elements, which chemistry shews to exist on the earth, it is likely, nay it is certain, that some have never been formed; that some elements, in some proportions and under some circumstances, have never yet been placed in relation with one another." \* Is it not then unphilosophical to assert that the powers of life *cannot* be the powers of the nineteen elements, or whatever be their number, which compose organic bodies, merely because the chemist has not

\* Sir John Herschel



the skill (which it was never intended he should possess—to possess which probably no finite mind is equal) to fashion those elements so as that they shall exhibit vital phenomena?

In conducting the discussion of an abstruse and intricate subject some prolixity is allowable, in order that it may be viewed leisurely and in more than one aspect. For this reason, I take the liberty of varying a little my line of argument and illustration. We are, for example, in the habit of saying that water becomes solid at the temperature of  $32^{\circ}$ , and that a fractured bone of an animal unites again. These facts having been observed as of invariable occurrence under particular circumstances, it is thence announced, that water congeals, and that a broken bone unites, in obedience to certain laws. But what is meant by the term law so applied? It merely expresses the fact, that certain phenomena occur in a certain invariable order of succession. In other words, if we admit the existence of an intelligent beneficent First Cause, and this I must beg to take for granted, the term law stands for the command of the Deity. A law of mechanics, of chemistry, or of life, means this and nothing less or more. Let us canvass the subject with whatever subtilty, yet when we have discovered that certain events in the material world invariably happen in a particular order, we have learned all we can ever possibly know in reference to this particular law or divine ordinance. Even should we chance to discover, (adverting to the re-union of a broken bone by the process of secretion,) that the phenomenon we had supposed to be the cause or antecedent of the other phenomenon was not its antecedent, but that, between these two phenomena, there existed a phenomenon intermediately; as for instance, suppose we discovered that secretion and absorption were not the immediate causes of the union of the ends of the bone, but that a species of attraction was, (whereby the matter of the callus was arranged in the order necessary to form bone) of which we had been previously unaware: or suppose we discovered that a temperature of  $32^{\circ}$  F. was not the immediate cause of the



congelation of water, but that electricity was, what should we gain by this discovery? We should gain the knowledge of a new fact, a new overlooked item of the divine command; but, besides this, our knowledge would receive no increase; it would remain the same *in kind* that it was before.\*

It is allowable to assume, because it may be shewn to be probable, that matter existed in the inorganic state before it received organic forms. Likewise, that inorganic matter, at its creation, had had impressed upon it its destination and tendencies,—that is to say, *its laws*: for every law has respect to future as well as to present exigencies. In the words of Sir John Herschel, “Every law is a provision for cases which may occur, and has relation to an infinite number of cases that never have occurred, and never will.” When, therefore, it pleased the Supreme Being to form organic creatures out of matter, for matter they obviously are, it is philosophical to infer, that he had not to institute new laws—to superadd fresh properties to the elements he employed, much less to create demi-intelligent organic agents, whose duty it should be to mould and fashion matter into animals and vegetables—but that his volition was the immediate cause of the existence of the first pair of each species of living creatures; matter, already possessed of the necessary powers and properties, arranging itself at his word into every variety of organic forms, from the minute moss and the animalcule to the vast palm and the mammoth.

\* It may properly, perhaps, be regarded as too figurative to speak of the toils of matter, of its drudging incessantly, like a slave, fulfilling the commands of a master; but the student of Scripture will readily call to mind the philosophical and profoundly instructive remark, that “all things are *full of labour*,” or as some translate, “are at their task.”

“Generation goeth, and generation cometh”  
 But the earth doth ever abide.  
 The sun also riseth, the sun also setteth,  
 And hasteth to the place where it rose;  
 It passeth to the south, again it eireleth to the North.  
 Round and round goeth the wind,  
 And ever repeateth its eireuits.  
 All the rivers run down into the sea,  
 Yet the sea doth not overflow;  
 To the place whence the rivers go forth,  
 To the same, to flow again, do they return.  
 All the things thus at their TASK, no man can reecount;  
 The eye would not be able to behold them,  
 Nor would the ear be competent to hear them.”

Here it will be said, that there is little difficulty in admitting that the first organic creatures, endowed with power to propagate their kind, sprang at once into existence at the supreme command. The difficulty, it will be contended, only commences when these living organised creatures, in requiring food, began to convert inorganic matter into their own substance; thus subjecting it to laws different from those it ever manifests *out of* organic bodies. But the difficulty is rather imaginary than real; it vanishes on a little reflection. The laws to which matter is subjected by galvanism were, at one time, new to us, and therefore wonderful; and, had they been announced *a priori*, would probably have been deemed incredible. But the effects of galvanism are now universally regarded merely as facts in science. And what is the digestion and assimilation of inorganic matter, likewise, but a fact in science? Matter as it exists in a living organic being, is not matter as matter exists in inorganic bodies; it has its own laws, just as galvanism has its laws, and a mass of potassa its laws; and one particular in the laws of living matter is that, under certain circumstances, it decomposes and re-arranges inorganic matter, so as that it no longer obeys chemical laws but the laws of the organic body, with whose particles it has become commixed. In short, by the properties or agencies of living matter, from being inorganic, it becomes organic matter. Why it thus submits to the vital laws is no more a secret than why the caustic substances, quicklime and sulphuric acid, unite to form a body not only free from causticity but possessed of properties belonging singly to neither of its constituents. The difficulty of accounting for the change in the one case is not greater than in accounting for the change in the other. In experimental science no one fact is in reality more wonderful than any other; it may be newer, or, to the eye of the observer, surrounded with more that appears intricate, and on principles with which he is familiar, incapable of explanation; but what of that? To regard all phenomena which are inexplicable on known chemical or mechanical principles as *necessarily*

referable to *higher* principles, is at once to take leave of sober sense for the sake of indulging a fantastic imagination. Hence I do not doubt that I am proceeding upon safe ground when, in the present state of our knowledge, I assume that a seed or an ovum is matter, and nothing but matter in a particular state of combination and arrangement; and, further, were the chemist able to treat matter so as to form artificially a seed, say an acorn, in all respects the same with one produced by nature, as to the arrangement and combination of its material constituents, that then the artificial acorn would germinate and grow to be an oak equally with the other. Whenever the chemist shall manufacture a perfect acorn, which refuses to germinate merely for want of the presence of an organic agent, it will then be time enough for me to accede to Dr. Prout's hypothesis.

This simple view of the nature of life involves one obvious, and as some think, formidable difficulty. We behold a creature, at this moment, assimilating food and exhibiting all the vital phenomena that, the moment after, without undergoing any apparent change in the condition of its component elements, dies. May it not, therefore, be affirmed in the words of Mr. Hunter, (who viewed this difficulty, except on the supposition of there being a vital principle, as insuperable) that "mere composition does not give life for the [recently] dead body has all the composition it ever had." This, doubtless, is the true statement of the difficulty, for if the recently dead body, as a compound of material elements, is in identically the same state after as it was before death, *something* the cause of vitality, different from the material elements and more subtle than they, must have left the body. But it is far from certain, that the composition remains the same. It is, perhaps, true that the body *appears* to have all the composition it ever had; but the senses are too imperfect an instrument to detect thousands of changes in bodies easy to be detected by other means. Prior to investigation, it would naturally be inferred by any one, on seeing a living creature die, that so great an outward change was probably accompanied by other



less obvious changes within the body itself; and he would hardly be warranted in affirming, that the composition remained the same after death without first obtaining some evidence for the fact. In what is called natural death, confessedly a rare occurrence, it is well ascertained that the event is caused by natural, gradual changes taking place in the organic frame; as, among others, by the solids increasing in density and rigidity, and the fluids becoming, relatively, more and more scanty, till at length the body is unfitted for obedience to the vital laws. But suppose other causes of death—the bite of a serpent, inflammation of the lungs, a fever, a mechanical injury; these, generally, effect changes in the texture and composition of the body, which the anatomist can detect; and in the rarer instances where no structural change is cognizable, the feeble light that animal chemistry is beginning to throw on the less appreciable morbid conditions, warrants the belief that some deviation from the natural and healthy composition of at least the blood, takes place; sufficient to bring about the surrender of the body to the dominion of chemical laws.

Let us trace the change from life to death in one of the least complicated examples. I assume that a fecundated pullet's egg is as much a vital thing as the hen that produced it. It exhibits no vital actions, it is true; but it is the subject of vital laws, and by them is maintained, as to composition and structure, in that particular state which constitutes it a fecundated egg; just as the hen is, by the same laws, maintained in the state which constitutes her a particular sort of living organic creature. If it be said that a fecundated egg is not the subject of vitality, because, at the ordinary temperature of the atmosphere, it manifests no vital action; for a similar reason it might be affirmed of gunpowder, that it is not the subject of chemical laws, because, at the ordinary temperature, it does not exhibit chemical action. Apply a certain degree of warmth to the egg, and, in due time, vital actions will take place in it, as certainly as that chemical action will occur in gunpowder on the application of a spark. If then it be true that chemical laws are



as much concerned in maintaining the substance, gunpowder, in its particular state of combination as they were in effecting the combination itself, it must be no less true that the vital laws are as much concerned in maintaining the egg in its state of susceptibility of incubation, as they are in the development of the chick when incubation is in progress.

The egg being exposed to a due degree of warmth, vital actions, as has been remarked, take place. But let the temperature be raised a little higher, and very different effects are produced. Not only do no vital actions ensue, but the vitality of the egg is found to have entirely disappeared. Perhaps no *visible* change whatever may have occurred, and an observer might be ready, with Hunter, to exclaim, mere composition could not be the cause of the vitality of this egg, for the egg has still all the composition it ever had. Yet would such an inference be reasonable? Would it not be more reasonable to conclude, knowing, as we do, the power of heat as a chemical agent, that the texture and composition of the egg had been *essentially* changed: in other words, that this powerful chemical agent had triumphed over the vital laws, converting the egg from a vital into a chemical body. Such appears to me to be the only sound and satisfactory conclusion we are at liberty to draw in the present state of our knowledge. If Dr. Prout will contend that the loss of vitality, under such circumstances, is caused by the expulsion from the egg of an organic agent—that the departure of this agent is the first in the series of changes which precede death, such a notion may be allowed to be very harmless, but surely it is a most attenuated hypothesis.

If vitality be the result, as I contend it is, of the properties of those elements which enter into the composition of organic beings, how astonishing a view is presented of the nature of matter! The number of species of plants and animals existing on our globe is probably a million; each not only distinct, but in a number of particulars different from every other species of plant and animal. Every species, again, has varieties, each possessing its

own distinctions; and each variety consists of, perhaps, myriads of individuals; not one of them exactly resembling any other, but distinguished or individualised by certain traits. Yet all these organic beings, their properties as vital bodies, and all the products they yield, whether spontaneously or in the hands of the chemist, are nothing but the nineteen elements variously combined. This view, astonishing as it is, admits of enhancement, when we think of organic creatures in the state of seeds and ova. It is evident, notwithstanding all kinds of seeds and all kinds of ova are in appearance and chemical properties so much alike, that every one, among the countless myriads of each, must be possessed of its own appropriate structure, composition, and powers; for from this cause only could their several products differ so widely and uniformly from each other. Probably no human eye, aided by the most powerful glass, nor chemical skill, would be able to detect the smallest difference between the undeveloped ova of the sheep and those of the tiger; and yet the difference is, in reality, so great as to be equal to the evolution of animal structures, so strikingly dissimilar. If a few of the elements of that comparatively small portion of matter which is within the reach of examination, be indeed thus fraught with wonders, how far above all admiration must He be who is the Creator of matter; who, conferring upon man the power to imitate a few of his operations in physics and in chemistry, has, in an absolute manner, reserved to himself the province of organic being, as that in which intelligent minds may most clearly trace the wisdom and goodness of his own transcendent nature.

## NOTE A, PAGE 10.

*Does consciousness supply sufficient evidence to prove that the mind is, in its nature, distinct from the body?*

Some answer in the negative. Mr. Wallace, an eminent lawyer, in his *Observations on Lord Brougham's Natural Theology*, writes thus :—

“ Let any man not a metaphysician, one ignorant of the dispute connected with the *immateriality* and separate existence of the mind, be asked for his *consciousness* respecting mind, it will be found that he has not the most remote notion, opinion, or *consciousness* that he consists of *two* parts, mind and body, and that when he uses the pronoun I, as referable to himself, he considers and thinks of himself as one and *indivisible*, the *concrete* person, composed of body and mind, making together an individual thing. He understands nothing of the supposed dominion of *his* mind over *his* body, that the one is master, the other slave—that when he speaks of self, and uses “ he ” or “ I,” he feels, means, or intends his *mind* only ; or that when he walks, he conceives that his feet are obeying orders only, that the command is given by a thing called *mind*, separate and independent of body, and that the *feet* only comply as in duty bound. The notion of a *consciousness* ascertaining or recognizing a diversity between mind and body, is assuredly known only, if it does really exist at all, in those *minds* which are, perhaps, *unconsciously*, swayed by opinions which they have been taught, or have formed upon argument whether well or ill founded.” *Observations on a Discourse of Natural Theology*, by Lord Brougham. By Thomas Wallace, Esq., L.L.D. one of His Majesty's Counsel-at-Law in Ireland, &c., page 104.

Before examining this notable statement I remark, that it is not my intention to argue for “ the separate and independent existence of the mind.” Lord Brougham may have expressed himself in such

a manner as to imply that this is a thing capable of complete proof, and so have exposed himself to Mr. Wallace's animadversions. I, however, do not think it admits of being demonstrated by argument; although I have no doubt it can be shown to be *probable*, as most who read attentively the first chapter of Butler's Analogy will readily admit.

In assuming that one ignorant of metaphysics has not a consciousness that he consists of two parts—mind and body, or that his mind rules his hands and feet, Mr. Wallace, of course, likewise assumes, that such a person, unbiassed by modes of thinking and expression common to professed metaphysicians, is pre-eminently qualified to decide the question. In a word, that it would merely be necessary to state it to him, in order, at once, to obtain a satisfactory reply. On the wisdom of such a proceeding there may, allowably, be difference of opinion. It would be possible, I am persuaded, to convince even such a person as Mr. Wallace supposes, for example an intelligent peasant, that he consists of two parts, mind and body; and that it is his mind which rules his hands and the other voluntary members—but this is by the way. I differ from Mr. Wallace as to the fitness of an uneducated person to entertain the question at all. The majority of mankind shun reflection as irksome and difficult, and a greater proportion still are not possessed of talents for abstract thought. To reflect with clearness and precision on our mental operations requires natural endowments which are so far from being universal, that, probably, not one in a thousand in the course of their lives even so much as make the attempt. The mass reason on what comes before them, as whether this commodity be better than that, and this line of conduct wiser, more creditable, or more profitable than some other. But ask them to give an account of the preceptions, feelings, and processes of reasoning, which arise in the mind in the course of such deliberations, and they would regard the performance of such a task as insurmountably difficult.

I will propose a far simpler instance by which to test the powers of Mr. Wallace's untutored reasoner. The existence of the Maker



of the universe admits of satisfactory proof by the smallest effort of thought of perhaps any abstract proposition. Well, then, the arguments of Socrates, for the being of a God, (of which the following furnish a specimen,) are as conclusive as any that have since his time been devised, having the merit of being obvious to ordinary observation, and level with the capacity of mankind however illiterate.

“Is not that Providence, Aristodemus, in a most eminent manner conspicuous, which, because the eye of man is so delicate in its contexture, hath, therefore, prepared eyelids like doors, whereby to secure it; which extend of themselves whenever it is needful, and again close when sleep approaches? Are not these eyelids provided, as it were with a fence on the edge of them to keep off the wind and guard the eye? Even the eyebrow itself is not without its office, but, as a penthouse, is prepared to turn off the sweat, which falling from the forehead, might enter and annoy that no less tender than astonishing part of us! Is it not to be admired, that the ears should take in sounds of every sort, and yet are not too much filled by them? That the fore teeth of the animal should be formed in such a manner as is evidently best suited for the cutting of its food, as those on the side for grinding it in pieces? That the mouth through which this food is conveyed, should be placed so near the nose and the eyes, as to prevent the passing, unnoticed, whatever is unfit for nourishment, while nature, on the contrary, hath set at a distance, and concealed from the senses, all that might disgust or any way offend them? And canst thou still doubt, Aristodemus, whether a disposition of parts like this should be the work of chance, or of wisdom and contrivance?” \*

I venture to assert that simple, obvious, and conclusive as these arguments are, for the existence of a deity, not one untutored person in ten thousand, if asked, would hit upon such proofs; although an infinite number of others equally to the purpose are suggested by facts continually before his eyes. He would, probably, not even attempt to bring forward proofs at all for his belief in a deity; and it would come out that he held this belief because others around

\* Xenophon's Memoirs of Socrates, translated by S. Fielding.

him held it. In short, he would be astonished, puzzled, perhaps irritated by the question ; but he would be incapable of furnishing an intelligent answer, merely for want of the habit of reflection. Were the arguments once clearly stated to him, he would immediately perceive their conclusiveness, and probably he would express his astonishment at their not having occurred to him before, so self-evident would they appear.

But is the evidence which consciousness affords, regarding the properties of mind as distinguishable from those of matter, more simple and more within the range of an untutored capacity ? I think not. On the contrary, it would be still more out of the way of his ordinary habits of thinking, and would be mastered, if mastered at all, with still more difficulty : as, indeed, it demands more mental effort. Design, when once it has been pointed out, necessarily suggests a designer, to the feeblest intellect ; but the power of taking cognizance of the successive states of the mind, so as to make them objects of continued reflection, requires an effort which is proved to be one of difficulty from its being comparatively so rarely attempted, and when attempted, so rarely made with any degree of success. But this I have remarked upon elsewhere.

Nevertheless, although I do not look upon one ignorant of metaphysics as the most proper to be appealed to for the decision of Mr. Wallace's proposition, it would not be difficult, as I before remarked, to convince even a philosopher of this unsophisticated class, that his mind is one thing and his body truly another thing.

With a view to accomplish this I would draw his attention to the circumstance of a man who, after arriving at adult age, has lost his eye-sight ; and request him to observe that that misfortune does not deprive the person of his knowledge of colours. Without violence to probability it may be supposed that we fall into the following dialogue :—

*A.* Is it not singular that this blind man, who, by trade, was a gardener, should still talk with so much animation about the delicate form of this, and the gracefulness of that flower ; and with no less delight, of the hues of his tulips and carnations, as if his eyes were actually wandering from

flower to flower with all the skill and taste of a connoisseur? I almost persuade myself that he has a more lively perception and enjoyment of the beauties of that class of objects than others have whose eyes are perfect. How are we to account for such a faculty?

*B.* It is, no doubt, owing to memory.

*A.* It is so, in part: but the word "memory" means a great deal. This blind man, allow me to observe, has as truly a perception of the colours of a tulip without vision as we by the help of our eyes—a fact which may convince us that it cannot be the eyes which see, as we in our loose manner of speaking commonly affirm, but something else.

*B.* I do not quite comprehend your meaning.

*A.* I will explain. Two years ago, before our blind acquaintance lost his eyes, a splendid tulip was presented to him, with which he was greatly delighted. Now, at this moment, were we to lead him to talk of this tulip, we should find he retains the most lively perception of its beauties. No doubt it was by means of his eyes he gained his knowledge of it, but his eyes are gone, and still he seems to perceive the tulip as clearly as ever. I argue, therefore, that it was not the eyes which saw the tulip, but something in its nature altogether distinct from the eyes; I mean the mind, which saw it by the instrumentality of those organs: hence the mind, it is fair to conclude, which sees, and retains a knowledge of what it sees, is one thing; and the eyes, by which it sees, are quite another thing.

*B.* I partly understand your meaning. You mean that the mind employs the eyes, in some sense, as an instrument, as a lame man uses a crutch?

*A.* Yes; but I will furnish you with a better illustration than the crutch. The planet Saturn, I am told, has a luminous ring, but I can gain no knowledge of it by my eyes. For this reason, I procure a telescope, by means of which I improve the eye as an instrument of vision so considerably as to be able to see and study this curious body. Having sufficiently examined Saturn's ring I throw aside the telescope, for my mind now perceives the figure of the ring, its relation to the planet, &c., as well as if it were within the range of my ordinary vision, and constantly before my eyes. Here the telescope is an instrument of seeing, and a necessary instrument, as without it the mind could have had no perception of Saturn's ring: and what else can be said of the eye, but that it is an instrument without which the mind could obtain no knowledge of colours, and of several of the other qualities of things? Only an instrument, however, that

may be laid aside, or even parted with at times, with little or no inconvenience to the mind.

*B.* The same remarks, I presume, apply equally to the ear, the nose, and the other organs of sense?

*A.* Doubtless they do: the continuance of the senses as the servants and instruments of the mind, is useful for the attaining of fresh knowledge, as well as for the welfare of the body; and, therefore, it is an evil, in general, to lose one or more of the senses. But there are cases in which it may be no evil, but the contrary. Let us think of a person, say a martyr for the faith, who has only a day to live. Suppose that, without affecting life, all his organs of sense (and the supposition is allowable) were suddenly paralysed. Would he suffer injury in consequence? Quite otherwise. The mind, replete with knowledge and experience, would only be thereby severed from sources of distraction and sorrow. He would not the less hold intercourse with his Master, not the less rejoice in the truth which he had embraced, nor less exult in the hope of his crown; perfectly shielded from the subtle suggestions and insidious temptations of his persecutors.

*B.* I admit you have mentioned a striking example to prove that the mind is distinct from the organs of the senses.

*A.* Well, but let us further think of this already mutilated martyr. Suppose that, before he is cast into the fire, the executioner were to sever his limbs from the body, one by one, but in such a manner as not to cause his immediate death, and that, after this, he were to utter in our hearing some heroic sentiment, would it not be allowable to exclaim, "True, his body they have mangled and cut in pieces, but it is evident his mind is entire and vigorous as ever!" insinuating the inference that the mind is something different from the limbs and other external organs?

*B.* Your exclamation would be justifiable. But granting that the organs of the senses and the limbs are only instruments which the mind employs for its purposes, is it not held by some that the brain is the ruler of the other parts of the body; in a word—the mind itself?

*A.* Certainly some assure us that they are of that opinion; and it is easy to make out a plausible case, because nobody denies that the brain is the organ of the mind—that organ by which the mind, in a manner we are unable to understand, is connected with the rest of the body and the material world in general.

*B.* Have there been no experiments to determine whether or not the brain be the mind?



*A.* Yes, thousands of brains of animals have been sliced in all possible ways, and every description of injury and disease of the brain, in man, has been carefully studied; but to little purpose, unless indeed to prove that the brain is subservient to the mind in a manner we cannot, in the the smallest degree, comprehend.

*B.* Do not injuries of the brain readily affect life?

*A.* Yes; and therein lies the difficulty in making experiments on the living brain, and in drawing inferences from the diseases of that organ. The condition of all the vital organs is affected by diseases and injuries of the brain: the vital power of the animal is diminished or quickly destroyed by them; and hence the effects which the particular injury or disease produces on the mind cannot be determined with accuracy.

*B.* You admit, however, that the brain is never known to be destroyed without the disappearance of the conscious mind.

*A.* And the extinction of life at the same time: in some cases where the brain is slowly destroyed to a great extent, the mind is not much affected; but again, slight diseases of the organ sometimes affect the mind greatly. The reason we cannot tell. One fact we know, that in cold-blooded animals, as the turtle, whose vitality is not easily disturbed or diminished by injuries—the brain may be scooped out until only a little bulb at the top of the spinal marrow remain, the animal still feeling, and performing voluntary motions. Children, again, have been born brainless, excepting the aforementioned bulb at the upper extremity of the spinal marrow, and yet they have exhibited manifest signs of consciousness.

*B.* Well, but why has not this bulb been sliced, in order to discover what would follow? Perhaps it is this portion of the brain which is the mind?

*A.* Why, if we cut or injure that portion the animal dies instantly—does not merely become insensible, but ceases to live.

*B.* You start many difficulties: I shall be glad to hear how you solve them. How do you prove, after all, that the brain is not the mind?

*A.* That I have, in part, attempted elsewhere; but I will show you the line of argument which is at once the simplest and the most conclusive. Please (having closed your eyes) to press the tips of your fingers on the table and then withdraw them.

*B.* I have obeyed you, what then?

*A.* Do you believe that table to be a part of yourself or not?

*B.* I believe it to be not a part of myself but something which is different.

*A.* Again, press the same fingers on the palm of the opposite hand, rubbing them gently over it. Do you believe that that which you touch is a part of yourself?

*B.* Why, yes, I do.

*A.* But the palm of the hand is something which you feel, and think about, just as in the case of the table; and can that which you are able to touch, feel, and, in consequence of so feeling it, to reason about, be indeed a part of yourself?

*B.* It is a part of myself—of my body.

*A.* You say it is a part of yourself. Consider, in rubbing the tips of your fingers over the palm you feel a broad surface; now what is extended may be cut in two parts. Suppose a half of your left hand were, by accident, severed, would you say that you had lost a part of yourself—would you cease to say “I” and “myself” ever after?

*B.* No, I should say that I had lost part of my hand.

*A.* “I” should say that “I” had lost part of “my” hand! Then it seems you would still say *I* and *my* as before; although you have assured me that by losing half of your hand, you would lose part of yourself. Suppose that one had owed you a sum of money previously to the accident, would you imagine, that since a slice of yourself was lost, you were on that account no longer entitled to the whole debt, but that a portion ought to be subtracted corresponding to the lost fragment?

*B.* No: I must admit I should still feel that I was entitled to the whole of the sum owing me.

*A.* Yes; and you will also admit, that were your hands, your arms, and legs removed,—nay, every member save your tongue, you would still speak of yourself as you do at this moment, and consider yourself as entitled to all your civil rights, privileges, and immunities?

*B.* Certainly.

*A.* And were the tongue with which you still uttered the words “I” and “my” removed—what then?

*B.* I should assert, in thought, what I would have uttered in words if I could. Indeed I am satisfied that my limbs and other members are not that which I call *I* and *myself*. But allow me in return to ask a question. What would happen, if, instead of my limbs and other members, my brain were the part experimented on?

*A.* Your question is an easy one. I shall suppose a portion of my skull and of the other coverings of my brain removed, and the brain thereby

exposed (for this has happened through accident to many,) and that I raise my hand to touch this mysterious substance, which some affirm to be the very mind itself; what do I touch? I touch a soft, unctuous, yielding body. I think with myself, what does it resemble? To what shall I compare it? In order to examine it more thoroughly, I scratch with the nail and gently penetrate its substance. By the help of two mirrors I even examine it with my eyes. But, except that I acquaint myself with its sensible qualities, I am no wiser for my pains. For in the act of touching and looking at my own brain, I feel, see, and thence reason concerning it as I should were it an indifferent external object. It would never so much as occur to me in handling, looking upon, and thinking, in reference to my brain, that I was examining *that* which I mean when I use the pronoun *I* — that which, in the words of the poet, “wanders o’er eternity,” which fears and hopes with reference to things beyond the scope of touch and vision, which claims (though with awful reverence) fellowship with the Supreme Mind, conscious of ability, in a sense, to love what he loves, to delight in what he delights, to approve what he approves, and to hate what he hates. An eminent living writer, who doubts if he have a soul, tells us that the soul, at all events, is not to be found in the researches of the dissecting-room. No; nor would it be detected under his scalpel were he to substitute living for dead brains. It would still, I imagine, be pretty evident that a brain is nothing but a brain, and a mind something altogether different from a brain.

*B.* Please to state your argument in the briefest form.

*A.* This it is: *a thing* (be it my table or my brain) *which I can touch, perceive, and reason about as an object of sense, cannot be my conscious mind*; or, which is the same thing, *cannot be conceived by me as being my conscious mind*: just as I cannot conceive the half as being equal to the whole of a thing. If the brain be the mind, the Creator has not merely decreed that we shall never know the fact, but that we shall *of necessity* believe the contrary.

*B.* The subject becomes more interesting as we proceed. Although I do not see how to evade your conclusion that the mind is distinct from all the organs, and that it governs the voluntary members, I shall be thankful if you can strengthen my convictions by further evidence.

*A.* There is a species of evidence for this great truth I will call *presumptive*, which, in my judgment, is of much force; and it rests too upon facts of a very familiar description. For instance, a reputable man of energetic mind and sober habits, owing to unusual circumstances of temp-

tation, becomes intoxicated. He talks and walks as others do under a similar influence; on a sudden a virtuous and respected friend enters where he is; the change produced is immediate. The mind, hitherto subdued and ruled by the intoxicating cause, arouses itself; the rambling, freakish imagination, and the voluble tongue are repressed; the excited look is composed, the irregular muscular activity controlled, and the judgment in a measure, regains its wonted ascendancy—all by *an effort*: but of what? not of any of the bodily organs; for no outward agent has been brought to bear upon the body, but of *that* which feels shame, which self-condemns, calculates consequences, and wills: in a word—the mind.

*B.* I have myself repeatedly observed the same thing.

*A.* A person over-fatigued, has sunk upon his seat, faint, exhausted, and scarce able to articulate. You allude to some important duty he has omitted to perform—that is to say, you address him as a thinking, moral being. He raises his eyes, deliberates for a moment, rises from his seat and proceeds to act. Who, witnessing the circumstance, be he a metaphysician or no metaphysician can escape the conviction that here the mind has dominion over the body, and that “the one is master and the other slave?”

*B.* Proceed if you please.

*A.* How do you explain the following fact—a fact established by the observation of Franklin, and others engaged in conducting polar expeditions—that a delicate frame, animated by a cultivated, moral mind, will sustain more privations, hardships, and even fatigue, than a greatly more muscular and robust frame whose mind is rude or morally debased?

*B.* The fact is curious and valuable, however it be explained.

*A.* I think it admits of but one, and that a very obvious explanation. Again, if it be not the mind which rules the hands and the feet, how are we to explain why slaves do not perform half the work of freemen? The owner of a slave is owner only of a body including, of course, a brain. Law has given him that; but it cannot give him more. It cannot give him in possession, the feelings of submissiveness, obedience, esteem, fidelity, which remain the slave's own inalienable property—equally as a very different class of feelings—a sense of wrong, sullen rage, disgust, abhorrence, revenge, cunning, deceit. We are assured by Mr. Wallace, that no man, except a metaphysician, ever imagined that his mind has dominion over his feet and his hands. If Mr. Wallace will cross-examine a slave, he will discover his error.

*B.* I have no difficulty in understanding this kind of evidence.



A. It might, by a little ingenuity, be multiplied to weariness. I will, however, only refer, very briefly, to one example, by which the mind, as something distinct from, and governing, the body is forcibly suggested. A friend, who has been the partner of my inmost thoughts, on whose judgment and affection I have always relied, and, especially, with whose views, on the most solemn subjects, I have ever agreed—is seduced to embrace some system of fanaticism. The change is astonishing. He is still the identical person he was in look, gait, features, stature, and bodily proportions; but, notwithstanding, the transmutation is complete. I exclaim, this my friend is no longer the same!—meaning, when I analyze my exclamation—not that a disease, or a dose of poison, or any form of physical evil has caused the transformation—for I find that I did not refer at all to the body—but that he, the permanent, sentient, thinking being, whom I called friend, is changed; his judgment prostrated, his temper, from being gentle, become positive, and his affections uprooted and let out on new objects—in one word, change is suggested in reference to the mind, but, in no degree, with respect to the body.

Assuming, that if my imaginary interlocutor is not, by this time, convinced that the mind is distinct from the body, the fault is not mine but his; I proceed to another of Mr. Wallace's opinions concerning mind, which, in some respects, is truly novel.

“The definition [of mind] one would seek,” says Mr. Wallace, “is not like that which we are at present obliged to be content with, and which is nothing beyond a description of its powers, functions, attributes—thinking, perceiving, abstracting, comparing, judging, willing, &c. Until something *beyond* description, such as this, shall be had, something defining it as to its essence and substance, no valuable addition to psychological knowledge can be obtained, nor any progress made in inquiries like the present. For that which is not the *essence*, but the *act* of what is called *mind*, may continue with fruitless controversy to be attributed by one set of disputants to organization, and by another, perhaps, with as much rational confidence to an immaterial mind.”—*Observations on Lord Brougham's Natural Theology*, page 46.

Here is a dilemma truly for the student of mind! He is called

upon, either to furnish a definition of mind, as to its essence and substance, or to rest assured "no valuable addition to psychological knowledge can be obtained, nor progress made in inquiries of this nature." Well may the psychologist despair of his science unless Mr. Wallace, who has condescended to point out this extraordinary desideratum, teach him also how it may be supplied. But can Mr. Wallace be really serious in these opinions? Were it not that his book is grave throughout, I should suspect that this was a specimen of that sort of irony for which the noble author, whose work he is criticizing, is himself so famous. If Mr. Wallace will furnish a definition of the essence of a bar of iron or of a stick of phosphorus, I engage in return to give him a definition of the essence of mind. At present, says he, we are obliged to content ourselves with a mere enumeration of the mind's "powers, functions, attributes,—thinking, perceiving, abstracting, comparing, judging, willing, &c." This I admit, but surely we are compelled equally to be satisfied, in our definition of iron, with the powers and attributes of that metal, as that it is blueish white, hard, elastic, malleable, tenacious, ductile, easily oxydized, admits of welding, &c. How justly astonished would a chemist be were I gravely to inform him, that it was to no purpose he pursued his inquiries respecting iron, so long as he neglected to supply a definition of the "essence and substance" of that metal! He would probably request me to inform him what I meant by the essence of iron; a question assuredly I should not be able to answer; nor, I may add, without arrogance, would Mr. Wallace either.

I suspect were Mr. Wallace only a little more explicit in stating his meaning, that after all, he means, by a *definition of the essence and substance of mind*, a definition of its *sensible* qualities, as whether it be white or black, hard or soft, and the like. Now this is a desideratum which the materialist will gladly supply in a description of the sensible properties of the brain; for the brain, he will inform Mr. Wallace, assuredly "thinks, medullary matter though it be." See Elliotson's Physiology, page 39.

There is one other assertion in the passage I have quoted from

Mr. Wallace's book, which is not less astonishing for its temerity than the former, namely, that until we possess a definition of the essence of mind, the mere powers and functions included in the ordinary definition of it, may continue, with fruitless controversy, to be attributed by one set of disputants to organization, and by another, perhaps, with as much rational confidence, to an immaterial mind.

In this notion there is certainly no novelty whatever, for other writers have said the same thing, and have been refuted ; but error, if not immortal, is yet wonderfully tenacious of existence. " In whatever manner," says Dr. Brown, " the materialist may profess to consider thought as material, it is equally evident that this system is irreconcilable with our very notion of thought. In saying that it is material, he says nothing, *unless he mean that it has those properties that we regard as essential to matter*, for without this belief, he might as well predicate of it any barbarous term that is absolutely unintelligible." Again, the same writer remarks, " I cannot but think that the too great caution of Mr. Locke, by giving the sanction of his eminent name to the possibility, at least, of the superaddition of thought as a mere quality to a system of particles, which, as a number of particles, have no thought, and yet have as a whole what they have not as parts of that whole, has tended, in a great degree, to shelter the manifest inconsistency of the doctrine of the materialist." " It is no daring limitation of the divine power to suppose that even the Omnipotent himself cannot confound the mathematical properties of squares and hexagons ; and it would be no act of irreverence to his power, though it were capable of doing everything which is not contradictory, to suppose that he cannot give to *a system of organs*, a quality wholly distinct from the qualities of all the separate parts." " Our sensations we know directly—matter we know only indirectly (if we can be said to know its nature at all) as the cause of our sensations. It is *that* which, in certain circumstances, affects us in a certain manner. When we have said this, we have said all that can be considered as truly known by us with respect to it ; and in saying this it is to our own feelings that the reference is made. Of the two systems, there-



fore,—the system which rejects all matter, and the system which rejects all mind—there can be no question which is the more philosophical.”—*Philosophy of the Human Mind*. Lecture xevi.

One other point, and one only, I shall allude to, before terminating this already too lengthy note. In Mr. Wallace’s Observations there is a number of queries, some profound and others obscure. Among the latter, I rank that which demands at what period of life the immaterial mind enters the body.\* Dr. Elliotson asks a similar question, but more circumstantially; as for instance, where the depot of souls is, how they [the souls] learn when an ovarian vesicle is impregnated, “how they fly to and get into it,” &c. &c., questions which betray, in that eminent professor, an impassioned and laudable curiosity rather than a philosophic discernment. Instead of replying directly, it may be allowable to ask these gentlemen, if they can tell whether the crust of the moon consists of stratified rocks; and whether or not fossil remains resembling those of the mammoth are embedded therein; should they demur at replying, I have to answer that my questions are only *relatively* absurd—absurd merely in relation to the present impossibility of ascertaining such points, while theirs are *essentially* absurd. When Mr. Wallace and Professor Elliotson shall have enlightened mankind by informing them what is the figure of a doubt, and the weight avoirdupois of a belief; and whether a volition or an inference have the greater superficies, I engage that there will be many prepared, in return, to inform them, “when and how souls fly to and get into the body.”

In conclusion, I cannot refrain from remarking how deeply and immovably this great truth—that the mind is distinct and essentially different from the bodily organs—appears to have been fixed by the Creator in the belief of mankind; for this reason, probably, that it is necessary, or let me say rather—of great value,

\* “If the mind be immaterial, i. e. a *spirit*—did it pre exist? Did it so from eternity? If not, was it a special creation in each individual case—contemporaneous with birth—or with the act of conception of the body,” &c. &c? While Mr. Wallace professes himself ignorant, whether the soul be material or immaterial, it is pretty clear, from many of his remarks, on which side of the controversy his feelings are enlisted. I beg to refer him and my readers to the second volume of Crombie’s Natural Theology for full and sufficient answers to all question, of the above description, which deserve notice.



in order to our obtaining, in that degree in which the human faculties are capable, right views of the divine nature. For although many acute thinkers profess themselves able to demonstrate the immateriality of the Deity, altogether independently of evidence proving the immateriality of mind in man who was formed *in the image of Him that created him*, their arguments are far too subtle for ordinary comprehension, and consequently are rather to be regarded as exercises of refined ingenuity than as of real importance in the science of natural theology.

NOTE B., PAGE 24.

Is superiority of mind in the animal creation *exactly* commensurate with superiority of brain?

“ Whenever our knowledge of any branch of natural philosophy is sufficient to enable us to study with success the uses of a part of the animal frame, we invariably discover the most exact adaptation of the physical structure to the office of the part. In the form and disposition of the bones, for instance, or in the structure of the eye, we find more and more occasion for wonder at the perfect art displayed, in proportion as we the more deeply study mechanics and the nature and properties of light. It is impossible for us, therefore to doubt, that in the brain there is the same exquisite fitness to the purposes for which it is designed. And as experiment and observation lead us to think that the brain is the organ through which the mind influences and is influenced by the body, we naturally conclude that its whole structure has a direct and immediate relation to the endowments and workings of the mind. The composition of the brain is doubtless as exactly suited to the phenomena of thought and feeling, as the structure of the eye to the properties of light. What inquiry is likely to prove more interesting, than to trace the relation which exists between an improving mental nature and its appropriate bodily instrument?

“ It does not appear that an increase in the absolute weight of the brain confers a superiority in mental endowments. Were this the case, the intellects of the whale and of the elephant should excel the rational nature of man. Neither does the relative weight of the

brain to the whole body appear the measure of mental superiority. The weight of the human brain is but  $\frac{1}{15}$  of the frame ; while that of a canary-bird is  $\frac{1}{14}$ . Nor, in conjunction with parity of form and structure even, does this relation appear of any value. The eagle is probably as sagacious as the canary-bird ; but the weight of its brain is but  $\frac{1}{60}$  of its entire weight.

“ We may next inquire, whether an increasing number and complication in the parts of the brain is essentially connected with improved mental functions ? The first instances which occur to the mind are in favour of the affirmative of this supposition. It may be inferred from their docility and surprising capability of receiving instruction, that birds have higher mental endowments than fish ; and accordingly in place of the nodules of the fishes’ brain, which are scarcely more than tubercles to originate nerves, birds possess an ample cerebrum and cerebellum. But in pursuing this argument, if we compare, on the other hand, the brain of birds with those of alligators and tortoises, we find no striking difference or physical superiority in the former over the latter, yet in mental development, the tortoise and alligator are probably much nearer to fish than to birds. The *instantia crucis*, however, upon this question, is found in the comparison of the brain of the cetaceous mammalia with the human brain, on the one hand, and with that of fish on the opposite.

“ The cetaceous mammalia have brains which, besides being of large size, are nearly as complicated as those of human beings ; they might, therefore, be expected, if the opinion which I am combating were true, to manifest a remarkable and distinguishing degree of sagacity. Endowed with a brain approaching nearly in complexity and relative size to that of man, the dolphin should resemble in his habits one of the transformed personages in eastern fable, who continued to betray, under a brute disguise, their human endowments. Something there should be very marked in his deportment which should stamp his essential diversity from the fishes, in whose general mould he is cast. His habits too, not shunning human society, render him especially open to observation ; and the class of men who have the constant opportunity of watching his

gambols in the deep are famed for their credulity, and delight to believe in the mermaid, the sea snake, and the craken. Yet the mariner sees nothing in the porpoise or the dolphin but a fish, nor distinguishes him, except by his unwieldy bulk, from the shoal of herrings he pursues. The dolphin shows, in truth, no sagacity or instinct above the carp, or the trout, or the salmon. It is probable even that the latter, which have but the poorest rudiment of a brain, greatly exceed him in cunning and sagacity.

“I am afraid that the instance which I have last adduced, is sufficient to overthrow most of the received opinions respecting the relation of the size, and shape, and organization of the brain, to mental development ; nor is it easy to find a resting place for conjecture upon this subject.

“Is there, we may ask, any ascertained relation between a single division of the encephalon and any class of mental affections ? It is often asserted, that some ratio exists between the size of the cerebellum and the force of the sexual appetite ; yet how opposite to this conclusion are the most obvious facts ! The cerebellum of frogs, which are remarkable for their salacity, is so small, that its existence has been disputed. Fish, on the other hand, have the cerebellum of great size. And in mammalia, in which the sense of smell certainly contributes principally to excite the sexual appetite, the olfactory nerve, which is of prodigious size, instead of having any visible connection with the cerebellum, appears to be an actual production of the cerebrum.

“Or can any relation be traced between the development of the brains of animals and the caste of their other organs ? We naturally suspect that such may be found, when we observe, that animals so unlike in their habits (at least as far as regards their mode of progression) as the frog and the snake, have brains precisely similar. We are led to think, by such instances, that the formation of the brain may have a greater reference to the physical character of the general frame than to the mind. Yet the brain of the *ornithorhynchus*, as it is delineated by Meckel, resembles not the brains of reptiles and birds, to which by its generative organs the animal seems allied, but the brains of mammalia.

“The brains of monkeys have a strong general resemblance to the human brain. This must surely refer to the resemblance of their physical organs to those of man, not to their sagacity: the dog should else have a brain shaped like that of the monkey.

“It is a common opinion, that the front of the brain is the seat of the intellectual faculties: yet in monkeys and in man, the back part of the brain is that which has the largest relative size. The sheep, on the other hand, has an ample front to its brain, a large intellectual region, according to the phrenological theory, while its instinct of attachment to its young has a poor locality in its moderate posterior cerebral lobe.

“M. Magendie makes the curious remark, that the brains of adult human beings exceed those of aged persons fifteen per cent in specific gravity.

“Has nothing then been discovered to mark an essential superiority in the brain of man? The question must, I believe, be answered in the negative. No physical condition, distinguishing the human brain from that of animals, and, therefore fitting it to co-operate with a rational soul, has as yet been ascertained, or even plausibly conjectured, to exist. We are as yet free to suppose, that a mental nature of a higher cast may possibly work with materials as gross as those which are suited to the instincts and small sagacity of brutes, or that some delicate difference of organization, finer than we yet have the means of testing, and independent of the relative size and volume of the brain, may be the material cause, especially qualifying the human brain to be the seat of reason.”—*Outlines of Human Physiology by Dr. Herbert Mayo*, third edition, pages 248—252.

In addition to the opinions of Mayo concerning the relation which mind, in the different orders of animated creatures, bears to cerebral development, I cannot withhold the sentiments of Dr. Prichard on the same subject; limiting myself, however, to a passage having reference to the insect tribes.

“If the evidence brought in support of the organological system, depends so entirely on universal coincidence between psychical



properties, and corresponding variations in the structure of the nervous fabric, it must be important to determine whether there are any departments of the animal kingdom in which instincts and motive habitudes, and an entire psychical nature are displayed analogous to those vertebrated animals, while yet in these departments there is no structure which can be said to bear resemblance to the complicated cerebral system of the so-termed higher animals. In all the vertebrated kinds, as I have observed, the organization of the nervous fabric is on one principle, and the same fundamental type, with different degrees of development, is traced in man, and in all other mammifers, in birds, reptiles and fishes; but here the resemblance terminates, and the nervous system of molluscous animals and insects presents but few and remote analogies to that which belongs to the first great branch of the animal creation. It is indeed to be presumed, that the nervous system, taken as a whole, fulfils in the tribes last mentioned, the same offices as in those animals who have it enclosed in a bony case. Still nothing exists at all resembling the complicated formation of the brain with its lobes and convolutions. It is so much the more surprising to find the higher instincts, which had almost disappeared in fishes, display themselves with new splendour and variety in the brainless insects—creatures which, in the wonderful imitations of intelligence that govern their motive habits, rival if they do not even exceed the sagacity of the animals which most approximate to man.”—See Supplemental note to a Treatise on Insanity.

#### NOTE C., PAGE 28.

##### *Moral Causes of Insanity.*

In regard to insanity produced by violent affections of the mind, it is justly remarked by Dr. Abercrombie, that the alleged moral cause is sometimes merely a part of the hallucination. With this caution placed before the reader, he will, I am sure, peruse with satisfaction, the following extract from Dr. Prichard's elaborate and excellent work on Insanity.

M. Esquirol's Table of Cases of Insanity produced by moral causes.

	In the Salpêtrière during the years 1811 and 1812.		In M. Esquirol's Private Establishment.
Domestic grief .....	105	.....	31
Disappointment in love.....	46	.....	25
Political events .....	14	.....	31
Fanaticism.....	8	.....	1
Fright .....	38	.....	8
Jealousy.....	18	.....	14
Anger.....	16	.....	—
Poverty, reverses of fortune .....	77	Reverses	14
Offended self-love .....	1	.....	16
Disappointed ambition .....	—	.....	12
Excess in study.....	—	.....	13
Misanthropy .....	—	.....	2
	Sum 323		Sum 167

“Care and anxiety, distress, grief, and mental disturbances, are by far the most productive causes of insanity. A sufficient proof of this remark may be found at once by inspecting the preceding table, drawn up by M. Esquirol. In this table, domestic griefs, poverty, and reverses of fortune, taken together, comprise considerably more than one-half of the whole number of cases attributed to the influence of moral causes.

“These causes are at all times influential in civilised countries, and hence one principal reason why insanity prevails in proportion to the cultivation of society. Poverty and reverses of fortune are sustained in very different degrees in different places and times; and this accounts for the fact, that insanity appears under particular circumstances to be more frequent than under others.

“Anxiety and agitation of mind caused by political events have occasionally produced a very decided effect on the numbers of persons becoming deranged. M. Esquirol declares that the law of conscription increased the number of lunatics in France, and that at every period of this levy many individuals were received into the hospitals, who had become insane through the excitement and

anxiety occasioned by it : they were partly from the number of those on whom the lot fell, and partly from their friends and relatives. ‘ The influence of our political misfortunes has been so great,’ says the same writer, ‘ that I could illustrate the history of our revolution from the taking of the Bastile to the last appearance of Bonaparte, by describing in a series, the cases of lunatics, whose mental derangement was in connection with the succession of events.’ Political disturbances, like the mental impressions which give rise to insanity, are among the exciting causes. They set the predisposing influences in operation, and bring out some particular character of madness ; but this impress, even if general, is still only temporary. At the destruction of the old monarchy, many persons became mad through fright, and the loss of their property. ‘ When the Pope came to France, religious maniacs were numerous. When Bonaparte made kings, there were many kings and queens in the madhouses. At the time of the invasion of France by foreign troops, terror threw many into derangement. The Germans had experienced the same effects at the era of our irruptions into their country.’ ”

#### NOTE D, PAGE 35.

*Is the doctrine of materialism ever likely to become popular ?*

The christian materialist (for some christians profess materialism) believes that man at death becomes subject to the laws of chemistry and dissolves, the elements of which he is composed passing to other uses in the economy of nature—perhaps to live and think in other rational forms ; and, further, that God will revive every man ; and that immortal life will begin at the resurrection. Therefore, when the materialist perceives the approach of death, it is to be inferred that he expects, in the coming change, not only to lose a consciousness of existence, but to cease entirely *as a being*, except in the remembrance of the Almighty Creator.

That some few christians, of a philosophic turn, have attained the high faith necessary for holding this view, I am bound to believe ; but I cannot imagine that any considerable number have been converts to it : or, that it is ever likely to be cordially embraced

as one of the dogmas of a sect. And for the following among a number of reasons which might be assigned :—

1st. Considerable vigour of mind, (more than falls to the common lot,) is required in order to arrive at a tolerable conception of this doctrine ; and, to say the least, all indistinct, incomplete notions concerning it, must inevitably engender repugnance and the horror of annihilation. Perhaps there are few if any instances of christians who, in the immediate view of death, have referred to the materialists' scheme as the only source of hope and comfort regarding immortality.

2nd. The mental faculties and affections of many, of such, for example, as suffer martyrdom for religion, and of many others dying of slow diseases, continue strong and lively to the moment of dissolution. Such being the case, is it probable that a scheme—requiring the belief that *that* which thinks so acutely, which hopes and loves with so great ardour, which is so capable of adoring and serving the Supreme Being, in the latest moments of bodily life, is to be dissipated with the fuel which consumes the body, or to enter into, perhaps, the organic system of the wild beast employed instead of the stake and the faggots—can ever be acceptable either, by anticipation, to the sufferer himself, or to those who sympathise with his cause? No: I apprehend there is something upon the whole so repulsive in the contemplation of such a dogma—something requiring, in those who embrace it, so much intellect and so little feeling as will ever hinder it from becoming generally acceptable.

3rd. To the enslaved, degraded, and oppressed (how large a proportion of the human family !) and to all those who take a deep interest in their condition, the christian materialist's scheme will not be palatable. For while it connects such, as to nature, with the beasts of burden whose lot they might often envy, and with the clods beneath their feet, it, on the other hand, in a degree, dissociates them from the unseen—the spiritual realities towards which their hopes and wishes naturally so often arise. It places the gulph of a temporary, but, as it will ever seem to the unre-



flecting mass of mankind, a dreary annihilation between them and their deliverance ; coupling the idea of escape from oppression and a weary life with that of the loss of being.

NOTE E, PAGE 45.

*Sir Charles Bell's views concerning the vital principle.*

In speaking of the material elements of bodies, I have all along assumed that what are commonly called the powers of those elements are ultimate facts in science—that the powers in truth are nothing besides the elements themselves which produce certain changes on mind, as also certain changes in respect to their own conditions by acting mutually on each other. For example : when I examine chlorine and potassium separately, each produces in me certain perceptions, that is to say, produces certain changes in my mind, through the medium of certain of the senses ; and when the particles of the same substances are brought into juxtaposition, they mutually act, and give rise to a variety of changes called chemical. I have not thought it necessary to allude particularly to the theory which supposes that the molecular forces of matter are referable to electric attraction and repulsion ; and for this reason, that it is, perhaps, only an hypothesis ; and also, supposing it a true theory, because we do not as yet know what electricity is—whether it be a general power of matter or an elementary substance. It is well known that Sir Humphry Davy was of opinion that chemical affinity and electrical attraction are produced by the same cause, acting in one case on atoms, in the other on masses : a theory at the present hour generally (not universally) embraced. He argued that substances having an affinity for each other are in different states of electricity, the one plus and the other minus ; that the more intensely these two different states exist in two bodies, the stronger is their affinity for each other, and that in order to decompose a compound or to put an end to the union between its constituents we have only to bring them into the same electric state. By Ampère it is contended that every atom of matter must be regarded

as essentially and permanently, either in a state of vitreous or of resinous electricity; and assuming that all bodies are collections of atoms held together and kept in their places, by the perpetual action of electrical attraction and repulsion, that it is not to be supposed these forces, at least in crystallized substances, act alike in all directions. Hence arises the conception of polarity, respecting which the reader will find a great deal of disquisition in Herschel's Discourse on the Study of Natural Philosophy, in Thomson's Inorganic Chemistry, and in Prout's Bridgewater Treatise; the latter author advancing the opinion, that the intimate molecules of matter must possess two kinds of polarity, the one chemical and the other cohesive; the former identical with electric, the latter with magnetic polarity. This, however, is to be regarded as a speculation of a fertile mind exuberant of novelties.

I before observed, that in referring so freely to the inherent powers and properties of matter in my remarks on Dr. Prout's hypothesis of an organic agent, I did not think it needful to allude particularly to the electric theory of chemical affinity, because it is not determined what electricity (including its modifications—galvanism, and magnetism) really is. If electricity be not a material element, but result, as Sir Humphry Davy alleges, from the *general powers and agencies* of matter, then it is nothing different from the common elements of matter. But if, as others imagine, it is a rare, subtle, and highly elastic fluid (or rather that there are two kinds of electric fluids, the one usually called *vitreous* and the other *resinous*) possessing a power of attraction for the particles of all ponderable matter, then it will follow, that a new element or elements must be added to the catalogue of material elements previously existing. It will follow according to this view when, for example, chlorine unites with potassium to form chloride of potassium, that instead of the compound consisting of chlorine and potassium merely, it must consist of these together with the elementary substances called vitreous and resinous electricity: in other words, instead of chloride of potassium consisting of two elements, it must be considered as consisting of four.

These observations I have thought needful, both in the way of apology for omitting to notice the electric theory of the molecular forces of matter ; and for the purpose of briefly noticing a theory of life, by Sir Charles Bell, which he has very lately published in his notes to Paley's Natural Theology.

“ The progress of science in the present day,” says Sir Charles Bell, “ though it does not bring us nearer to the comprehension of the nature of life, yet furnishes us with such analogies as enable us more easily to comprehend how this principle may be combined with the material of an animal body, and yet be perfectly distinct from it. The discoveries which have led to the atomic theory, and to that of the molecules of bodies being under a polaric influence, leave us with the impression, that the minute particles of common matter (in contradistinction to living matter) are under an influence which may be bestowed or withdrawn : that as the index of the compass points to the north, by no property of the metal itself, but through an influence given to it, and existing around it, so do the most minute particles of bodies arrange themselves by some such superadded influence, and partake of polarization. If, then, according to the prevailing opinion of philosophers, every thing we touch, or see, or taste, all matter, in short, exhibits qualities arising from the arrangement of particles infinitely minute, and that arrangement resulting from an influence exterior to them, or superadded to them, does it not facilitate our conception of a power or property bestowed on what is termed living matter, and yet *essentially* distinct ? The difference between dead and living matter will then appear to be, that in the one instance the particles are permanently arranged, and continue to exhibit their proper character, as we term it, until by ingenuity and practice some means are found to withdraw the arranging or uniting influence ; and then the matter is chemically dissolved : resolves into its elements, and forms new combinations : whilst the life continues, not simply to arrange the particles, and to give them the order or organization of the animal body, but to whirl them in a series of revolutions, during all which the material is passive, the law being in the life. The order and succession of



these changes, and their duration do not result from the material of the frame, which is the same in all animals, but from that influence which we term life, and which is superadded to the material."—*Paley's Natural Theology with Notes, by Lord Brougham and Sir Charles Bell*, vol. ii. p. 408.

On this attempt to illustrate, in the way of analogy, the hypothesis of a vital principle, ruling in every organic being and disposing the material atoms according to the type of the particular species, by the electro-chemical theory of Davy and Prout, I have only to observe, that it is an attempt to illustrate and sustain one hypothesis by another hypothesis. With respect to that part of the illustration which supposes the index of the compass to point to the north by no property of the metal, but by an influence given to it and existing around it, this is to assume, as if it were indisputable, that electricity (with which magnetism is now identified) is not a general power of matter, but a material element. If it be matter—if it be true that the phenomena of the magnet are caused by a subtle, highly elastic fluid circulating in currents on the surface of the needle and within its substance, and also that there are corresponding currents of the same fluid circulating within the earth, especially near its surface, passing from east to west, in planes parallel to the magnetic equator, whereby all bodies which are freely suspended, and are possessed of electric currents, are compelled to place themselves in such a position, that the current on their under side flows in parallelism, and in the same direction, with that in the earth immediately beneath,—then is there nothing perhaps, particularly recondite in the instance of the magnetic needle, fitting it to serve as an illustration of the *modus operandi* of the vital principle.

Again, in reference to the polarity of the atoms of bodies being caused by electricity, if it be true that polarity depends on electricity, and that the electric condition of atoms, whether positive or negative, is permanent, it will not follow, as Sir Charles supposes, that the atoms are passive, but (seeing there must be a mutual and permanent adhesion between an atom of common matter and the atmosphere of electric atoms which surrounds it)



that the molecular forces will be the forces of the compound ; that is to say, not of the electric atmosphere alone, nor of the atom alone, but of the two thus permanently conjoined.

The difference between dead and living matter, Sir Charles goes on to remark, appears to be, that the atoms of a chemical body are permanently arranged by electric attraction and repulsion, until means are taken to effect a decomposition ; whereas in a living body, “ the life ” continues not only to arrange the atoms which enter into its composition, but to “ whirl ” them in a series of revolutions, during all which time the atoms are passive, “ the law being in the life ; ” in other words, “ the life ” is alone subject to a law according to which it selects nineteen out of the fifty-two elements of common matter, which present themselves, with which to construct a living body, and whirls them with inconceivable skill, method and order, so as, from a small rudimental atom of albumen (such as the embryo, in the first week, appears to be) to fabricate that paragon of animals—man ! If Sir Charles really attaches a definite meaning to the words he employs in unfolding his theory of a living principle, I imagine that few of his readers will be equally acute. The notion that the atoms of matter, which nourish an organic being, remain passive and are unceasingly whirled by something which Sir Charles calls “ the life,” is more strangely unintelligible than anything to be found in Barclay’s massy volume on Life and Organization ; and in that volume the reader will find many notions not a little strange. Why will not Sir Charles and the rest allow the Deity to perform his own work according to the simple methods of his own infinite power ?

E N D.



